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Historical Memory and György Ligeti's Sound-Mass Music 1958-1968

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Historical Memory and György Ligeti's Sound-Mass Music 1958-1968

by

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Dissertation

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For Darren and Ian, as a gesture of love and respect

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Historical Memory and György Ligeti's Sound-Mass Music 1958-1968

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This dissertation investigates the relationship between György Ligeti's sound-mass works and the musical past. After his emigration in 1956, Ligeti (1923-2006) gained renown for his sound-mass style, exemplified in works such as *Apparitions* (1958-59), *Atmosphères* (1961), *Requiem* (1963-65) and *Lontano* (1967). These works minimize the perceptual salience of melody, rhythm and harmony, instead foregrounding orchestral clusters and thus suggesting that timbre is the central compositional issue. Despite his immersion in the creative atmosphere of the Darmstadt circle, Ligeti's sound-mass works diverged from the serial, pointillist style that preoccupied the European avant-garde at the time. However, I argue that Ligeti's distance from the Darmstadt avant-garde is only apparent. In fact, this milieu served as his primary socio-cultural reference point after his emigration.

The concept of "historical memory," following from the work of French sociologist Maurice Halbwachs (1877-1945), suggests that Ligeti's understanding of the musical past was deeply shaped by the collective interpretations in circulation amongst the Darmstadt avant-garde circle. Analysis of Ligeti's sketches, writings and scores shows that he recollected historical influences that were important in the discourses of his milieu and redeployed them in his sound-mass works. For example, Ligeti's *Apparitions*

shows traces of the analyses of Debussy's *Jeux* that were produced by Herbert Eimert and Karlheinz Stockhausen. *Atmosphères*, though it is an acoustic work, reflects the collective representation of electronic music that had developed at the *Westdeutscher Rundfunk* studio in Cologne. The Darmstadt composers' sustained interest in the concept of *Klangfarbenmelodie*, as practiced by both Schoenberg and Webern, informs Ligeti's use of timbre in *Lontano* and the *Cello Concerto*. Finally, Ligeti capitalizes upon the popularity of Webern around Darmstadt, using Webern's music as an opportunity to recast Bartók's achievements to his new Western European colleagues in the *Requiem*. Ligeti's renegotiation of the musical past, within the discourses of his Darmstadt avant-garde milieu, was crucial for his composition of the sound-mass works.

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Chapter 1

Ligeti's Sound-Mass Works as Places of Historical Memory

If the number of monographs dedicated to his music are any indication, György Ligeti (1923-2006) is one of the more intriguing composers of the latter half of the twentieth century.[1] The particulars of his biography are, by now, quite well known: after escaping a Hungarian forced labor camp during World War II, Ligeti completed his musical education at the Conservatory in Budapest. In late 1956, Ligeti and his wife narrowly escaped a violent crackdown by the Soviet communist regime by crossing into Austria on foot. The two remained as refugees in Vienna and Ligeti secured an internship at the electronic music studio at the *Westdeutscher Rundfunk* in Cologne, Germany in early 1957. This experience marked the beginning of his association with the Darmstadt avant-garde, a loosely bound group of young Western European composers, which gathered for a few weeks every summer to intensively study, hear and debate new music during the *Ferienkurse* (Summer Courses) in Darmstadt, Germany.[2]

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[1] Wolfgang Burde, *György Ligeti: Eine Monographie* (Zürich: Atlantis-Musikbuch, 1993); Ulrich Dibelius, *György Ligeti: Eine Monographie in Essays* (Mainz: Schott, 1994); Constantin Floros, *György Ligeti: jenseits von Avantgarde und Postmoderne* (Vienna: Lafite, 1996); Paul Griffiths, *György Ligeti* (London: Robson Books, 1983); Marina Lobanova, *György Ligeti: Style, Ideas Poetics*, trans. Mark Shuttleworth (Berlin: Verlag Ernst Kuhn, 2002); Pierre Michel, *György Ligeti*, 2nd ed. (Paris: Minerve, 1995); Ove Nordwall, *György Ligeti: Eine Monographie* (Mainz: B. Schott's Söhne, 1971); Herman Sabbe, *György Ligeti*: *Studien zur kompositorischen Phänomenologie* (Munich: Edition Text + Kritik, 1987); Erkki Salmenhaara, *Das musikalische Material und seine Behandlung in den Werken* Apparitions, Atmosphères, Aventures, *und* Requiem *von György Ligeti* (Regensburg: Bosse, 1969); Richard Steinitz, *György Ligeti: Music of the Imagination* (Boston: Northeastern University Press, 2003); Richard Toop, *György Ligeti* (London: Phaidon Press, 1999).

[2] On the establishment of the Darmstadt *Ferienkurse*, see Amy Beal, *New Music, New Allies: American Experimental Music in West Germany from the Zero Hour to Reunification* (Berkeley: University of California Press, 2006); Gianmario Borio and Hermann Danuser, eds., *Im Zenit der Moderne: Die*

The period was, perhaps unsurprisingly, one of extraordinary artistic ferment for Ligeti. Shortly after coming to the West, he began to produce works such as *Apparitions* (1958-59), *Atmosphères* (1961), *Volumina* (1961), *Aventures* (1962-65), *Nouvelles aventures* (1966), *Requiem* (1963-65), *Cello Concerto* (1966) and *Lontano* (1967). These works exemplify the sound-mass style, so named because of the way these works foreground homogenous, colorful orchestral clusters and minimize the impact of the more discrete parameters of pitch, rhythm, harmony and melody.

Ligeti's turn to sound-mass music in the late 1950s and 1960s was shocking, even for those in his circle, and these works quickly gained fame and notoriety after their premieres. Despite Ligeti's relationships with the composers active in the Darmstadt avant-garde—Karlheinz Stockhausen, Herbert Eimert, Gottfried Michael Koenig, Pierre Boulez and Bruno Maderna, among others—*Atmosphères* and similar works bore little obvious relation to the pointillist style that had characterized the compositions of many members of the so-called Darmstadt school in the early 1950s.[3] At the same time, his sound-mass works did not seem to relate conceptually or sonically to John Cage's aleatory compositional techniques either, which were hotly debated amongst the

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Internationalen Ferienkurse für Neue Musik Darmstadt 1946-1966 (Freiburg im Breisgau: Rombach, 1997); Hans Ulrich Engelmann, "Zur Genesis der 'Darmstadt Schule' (1946)," *Von Kranichstein zur Gegenwart: 50 Jahre Darmstädter Fereinkurse* (Stuttgart: DACO Verlag, 1996), 50-54.

[3] Some writers suggest that the idea of a "Darmstadt school," is too monolithic given the different techniques, concerns and aesthetics of its members; see for example Christopher Fox, "Music After Zero Hour," *Contemporary Music Review* 26/1 (Feb. 2007): 13-14. While it is clear that the Darmstadt composers had individual approaches to musical composition, they responded to the same set of cultural and political circumstances in the post-war years. Throughout this dissertation I argue that the discourses that circulated amongst this group provided a common ground upon which the avant-garde's concerns, influences and directions were defined. Far from monolithic, the process of producing discourses within a social group is dynamic and multi-faceted; at the same time these discourses reveal the shared values that exist among the group despite aesthetic or technical differences.

Darmstadt composers after Cage's attendance at the 1958 *Ferienkurse*. Ligeti's popularity increased markedly after the sound-mass style was introduced in *Atmosphères* and has not really waned, despite numerous changes in his style that have included a return to more tonal idioms. A growing body of research stands as evidence of the continuing relevance of his music for academics and contemporary audiences alike. In fact, the generous analytical attention afforded Ligeti's sound-mass music may be a consequence of the elevated status of timbre, or sound color, in those works. Timbre, since it is somewhat more difficult to contend with than melody, harmony and rhythm, produces a compelling compositional and analytical problem.

As subsequent analysts and Ligeti himself have pointed out, many of the sound-mass works use the technique of micropolyphony, which means that the same melodic pitch sequence is set simultaneously in each individual instrumental voice, often with slight rhythmic variations and canonic staggering of entrances. The polyphonic interaction between the numerous individual voices, when they are layered together, creates Ligeti's characteristic web of sound and the concomitant impression for the listener that the music is based on texture and timbre rather than melody, harmony or rhythm. Analyses that examine the contrapuntal basis of Ligeti's sound-mass works are helpful in elucidating their inner workings, yet they fail to capture the overwhelming aesthetic effect of the sound-masses.[4] In some ways these micro-structural analyses are

[4] Jonathan Bernard, "Inaudible Structures, Audible Music: Ligeti's Problem, and His Solution," *Music Analysis* 6/3 (1987): 207-236; Bernard, "Voice Leading as a Spatial Function in the Music of Ligeti," *Music Analysis* 13/2-3 (1994): 227-253; Jane Piper Clendinning, *Contrapuntal Techniques in the Music of György Ligeti* (Ph.D. Diss., Yale University, 1989); Clendinning, "Structural Factors in the Microcanonic

akin to dissecting the direction of Mark Rothko's brush strokes on the canvas—they miss the effect of the totality.

Admittedly, the overall impression produced by Ligeti's works is extremely difficult to deal with in analytical terms. If timbre is the overriding parameter that defines Ligeti's sound masses for the listener, analysis of Ligeti's changing timbres has been elusive. As Amy Bauer has noted, timbre is a difficult phenomenon to analyze—in lieu of concrete, quantifiable parameters, timbre is defined only as a difference in sound quality when pitch is the same.[5] Timbre is highly variable even within a single instrument, depending on range, articulation, attack and decay, and loudness, hence further complicating analysts' attempts to catalogue or analyze timbres. Robert Cogan and Benjamin Levy have produced insightful analyses of Ligeti's *Lux aeterna* (1966), *Glissandi* (1957) and *Artikulation* (1958) using spectrographs, but the spectrograph remains of limited usefulness since it reveals little about the phenomenal properties of timbre in complex mixtures like those found in Ligeti's sound-mass works.[6] Cognitive approaches to timbral analysis are similarly challenged by a lack of thorough

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Compositions of György Ligeti," *Concert Music, Rock, and Jazz since 1945: Essays and Analytical Studies*, ed. Elizabeth West Marvin and Richard Hermann (Rochester: University of Rochester Press, 1995), 229-258; Miguel A. Roig-Francoli, "Harmonic and Formal Processes in Ligeti's Net-Structure Compositions," *Music Theory Spectrum* 17/2 (1995): 242-277; Bruce Reprich, "Transformation of Color and Density in György Ligeti's *Lontano*," *Perspectives of New Music* 16/2 (Summer 1978): 167-180; Robert Year Rollin, "Ligeti's *Lontano*: Traditional Canonic Technique in a New Guise," *The Music Review* 41/4 (1980): 289-296.

[5] Amy Bauer, "Parameters and Structure in the Music of Ligeti," *Indiana Theory Review* 22/1 (2001): 37-64.

[6] Robert Cogan, "György Ligeti: *Lux Aeterna*," *New Images of Musical Sound* (Cambridge, MA: Harvard University Press, 1984), 39-43; Benjamin Levy, *The Electronic Works of György Ligeti and Their Influence on His Later Style* (Ph.D. Diss., University of Maryland, 2006); see also Andras E. Beurmann and Albrecht Schneider, "Struktur, Klang Dynamik: Akustische Untersuchung an Ligetis *Atmosphères*," *Hamburger Jarhbuch für Musikwissenschaft 11* (Laaber: Laaber Verlag, 1991), 311-334.

understanding of the complex, changing nature of timbre and its effects on our musical perception.

The apparent impenetrability of Ligeti's sound-masses—both for the listener and the analyst—has led a number of analysts to grapple with the structure of the works through general descriptions of the compositional elements or narrative readings of the form.[7] Despite all of this analytical attention, Ligeti's sound-mass works remain, in many ways, analytically elusive—analyses that dissect the works as well as those that grapple with the overall form are unable to capture and explain the aesthetic effect of the pieces when they are heard. Ligeti's sound-mass works appear greater, perceptually speaking, than the sum of their micropolyphonic parts. There is an inherent paradox in the realization that the shape, texture and timbre of the sound-mass as a whole is critically important to Ligeti's work, yet it is difficult to grasp analytically, despite the copious score notation. This kind of paradox is characteristic of Ligeti's work and aesthetics on the whole.[8] For example, Amy Bauer has interpreted Ligeti's compositional approach as

[7] Christian Ahrens, "Elementare Strukturprinzipien in Ligeti's *Atmosphères*," *Weine, meine Laute: Gedenkschrift Kurt Reinhard* (Laaber: Laaber Verlag, 1984), 37-46; Francis Bayer, "*Atmosphères* de György Ligeti: éléments pour une analyse," *Analyse musicale* 15 (1989): 18-24; Constantin Floros, "Der irisierende Klang: Anmerkungen zu Ligetis *Atmosphères*," *Lass singen, Gesell, lass rauschen: zur Aesthetik und Anaesthetik in der Musik*, ed. Otto Kolleritsch (Vienna: Universal Edition, 1997), 182-193; Harald Kaufmann, "Strukturen im Strukturlosen," *Melos* 31/12 (December 1964): 391-398; Helmut Schaarschmidt, "György Ligeti: *Atmosphères* für größes Orchester ohne Schlagzeug," *Werkanalyse in Beispielen*, ed. Siegmund Helms and Helmuth Hopf (Regensburg: Bosse, 1986), 370-378; Sigrun Schneider, "Zwischen Statik und Dynamik: Zur formalen Analyse von Ligetis *Atmosphères*," *Musik und Bildung* VII/10 (1976): 506-10; Joyce Shintani, "Die Anfänge der Klangflächenkomposition: Ligeti-Cerha-Penderecki," *Von Kranichstein zur Gegenwart*, 307-320; Markus Suplicki, "György Ligeti: *Atmosphères*—eine unkausale Form?" *Musiktheorie* 10/3 (1995): 235-247. A number of the monographs also contain this type of analysis.

[8] See in particular Lobanova, *György Ligeti*, 3-38.

parodic.[9] Eric Drott has focused on the way Ligeti's compositional techniques both create a distinctive compositional voice and simultaneously displace it.[10] Following from this line of scholarship, I pursue an argument that aims to deepen our understanding of Ligeti's paradoxical aesthetics by asking what the relationship is between Ligeti's avant-garde sound-mass works and the musical past.

The "Rhetoric of Autonomy" around Darmstadt

In Ligeti's case, the same paradoxical aesthetics that govern his compositional style can also be noted with regard to his musical influences.[11] On the one hand, Ligeti spoke often of his attachment to historical predecessors, often those from the distant past. Ligeti named diverse composers such as Pérotin, Machaut, Ockeghem, Scarlatti, Chopin, Schumann, Mahler, Wagner, Debussy, Webern, Berg, Stravinsky and Bartók as musical inspirations.[12] Despite his apparent willingness to divulge attachments to his precursors, Ligeti also cultivated a "rhetoric of autonomy," which disavowed allegiance to any specific school or style.[13] In particular, Ligeti preferred to represent himself as independent from the Darmstadt milieu: "It never occurred to me, for instance, to join the

[9] Amy Bauer, *Compositional Process and Parody in the Music of György Ligeti* (Ph.D. Diss., Yale University, 1997).
[10] Eric Drott, *Agency and Impersonality in the Music of György Ligeti* (Ph.D. Diss., Yale University, 2001). See also Drott's account of Ligeti's unlikely association with the performance-art group *Fluxus* in the 1960s: Drott, "*Ligeti in Fluxus*," *Journal of Musicology* 21/2 (2004): 201-240.
[11] On Ligeti's alternating embrace and rejection of the past, see Klaus Kropfinger, "Ligeti und die Tradition," *Zwischen Tradition und Fortschritt*, ed. Rudolf Stephan (Mainz: B. Schott's Söhne, 1973), 132-133; Wolfgang Burde, *György Ligeti: Eine Monographie* (Zürich: Atlantis-Musikbuch, 1993), 85-90.
[12] See in particular György Ligeti, *Ligeti in Conversation with Peter Varnai, Josef Hausler, Claude Samuel, and Himself* (London: Eulenberg, 1983), 13-32 and 78-80.
[13] Charles Wilson, "György Ligeti and the Rhetoric of Autonomy," *Twentieth Century Music* 1/1 (2004): 5-28.

'official' serialists of Darmstadt-Cologne. I dislike the idea of being a member of a clique."[14] Ligeti projected a self-crafted image that seemed to stand outside of the contemporary political, ideological or compositional dogma of any particular group.[15] According to Wilson, this rhetorical turn allowed Ligeti to position his work as unique in the "competitive market of symbolic goods."[16] By deliberately crafting a space for himself as a non-conformist, an ancillary to the Cologne-Darmstadt group of composers, Ligeti implied that his music was the avant-garde of the avant-garde, as it were.

Many critics have followed Ligeti's lead and read his mature style as wholly independent, despite his association with the Darmstadt avant-garde. As Wilson remarks,

> His commentators, with few exceptions, continue to present him [Ligeti] (pursuing the totalitarian analogy) as a 'dissident,' an outsider to the avant-garde. In support of this they cite a number of points: his early 'heroic' rejection of serialism; his development of a distinctive style of orchestral writing involving dense chromatic clusters; and finally his calculated reintegration of harmony (including formerly 'forbidden' consonances, such as octaves) and melody.[17]

Perhaps critics have found this interpretation particularly easy to accept since Ligeti did not begin writing serial music like Boulez and Stockhausen after his emigration—admittedly, his sound-mass music is quite aesthetically different from his colleagues' music. Critics have also been able to rationalize Ligeti's major aesthetic shift to sound-mass music as a consequence of his personal circumstances. In this line of argument, Ligeti's sound-mass works are read as manifestations of his newfound independence from the neo-Bartókian style mandated by the policy of Socialist Realism in post-war

[14] Ligeti, *Ligeti in Conversation*, 29.
[15] Lobanova, *György Ligeti*, 208.
[16] Wilson, "Rhetoric of Autonomy," 6.
[17] Wilson, "Rhetoric of Autonomy," 10.

Hungary, which had necessarily shaped his youthful works. Thus, his emergence from behind the Iron Curtain naturally allowed for his artistic maturation.[18]

Ligeti, for his part, seems to have understood his turn to sound-mass music as a natural stage in his personal, compositional evolution. As such, he sought to diminish the relevance of both the political situation behind the Iron Curtain in Hungary and his new post-emigration Darmstadt milieu in shaping his mature sound-mass style.[19] While he admitted that certain experiences and relationships were important to him—particularly meeting with Boulez, Stockhausen, Eimert and Koenig, and working in the electronic music studio of the *Westdeutscher Rundfunk* in 1957[20]—he consistently emphasized that his ideas for the sound-mass music were always in his head: "The change in my musical style did not really coincide with my leaving Hungary. My first 'static' piece dates back to the summer of 1956."[21] At times, he revised this date backward, however, saying that he actually imagined the sound-mass works much earlier: "I first began to think about a kind of static music you find in *Atmosphères* and *Apparitions* in 1950; […] Around 1950, I could *hear* the music I imagined but I did not possess the *technique* of imagining it put on paper."[22] At other times, his inspiration for the sound-mass works was located even earlier. Ligeti's childhood dreams—particularly his alternating fear of and fascination

[18] Sallis summarizes those who take this position in *An Introduction to the Early Works of György Ligeti* (Cologne: Studio, 1996), 200-204.
[19] Wilson, "Rhetoric of Autonomy," 13-14.
[20] Ligeti, *Ligeti in Conversation*, 37, 39-40, 88, 90; Ligeti, *Träumen Sie im Farbe? Ligeti im Gespräch mit Eckhard Roelcke* (Vienna: Paul Zsolnay, 2003), 82-100.
[21] Ligeti, *Ligeti in Conversation*, 34. Friedemann Sallis also emphasizes the continuity between Ligeti's youthful works and his mature, post-emigration sound-mass works; see *An Introduction to the Early Works*.
[22] Ligeti, *Ligeti in Conversation*, 33. Emphasis Ligeti's.

with spiders and spider webs—are often invoked as an explanation for his signature micropolyphony.[23] As Wilson observes, "Thus we arrive at a purely immanent rationale for a technique that one would otherwise probably seek to explain in terms of Ligeti's responses to the work of fellow composers."[24] In focusing on the continuity between his childhood, his youthful compositions and his mature style, Ligeti further dissolved the need for explanations that invoke his emigration and subsequent interaction with the Darmstadt avant-garde.

Ligeti's reluctance to claim direct contemporary lines of inspiration, though he surrounded himself with a vague cloud of numerous historical precursors, is to some extent another expression of the rhetoric of autonomy that reigned in the Darmstadt environment. Declining to claim direct inspirations for one's work (outside of Webern's music) was a predictable stance in the post-war years; the younger generation of Darmstadt composers were often ambivalent if not outright hostile toward most of the musical past. Consider, for example, Boulez's statement that "[…] the present generation can take leave of its predecessors: it has succeeded in defining itself precisely and explicitly enough not to have to accept patronage or be haunted by the past any more."[25] This attitude may stem partly from the cultural after-shocks of the *Stunde Null*, or Zero Hour—the term that describes the utter decimation of German society and cultural life at

[23] Ligeti, *Ligeti in Conversation*, 25-26. Wilson argues that Ligeti's autobiographical attributions such as the spider-web dream are particularly persuasive because they are not easy to refute and simultaneously, are effective metaphors. "Rhetoric of Autonomy," 13-14.
[24] Wilson, "Rhetoric of Autonomy," 14.
[25] Boulez, "Near and Far (1954)," *Stocktakings from an Apprenticeship*, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 141.

the end of the war.[26] In the immediate post-war years, the musical past had been unavailable for so long that many of the younger generation had perhaps learned to do without it; as Christopher Fox says, "The cumulative effect of Nazism was a political, ethical and cultural vacuum in all those countries which, willingly or unwillingly, had become part of the Third Reich."[27] Furthermore, the process of de-Nazification and reintroduction of musical culture in Western Europe (Germany in particular) was highly politicized, between the considerable American influence and emerging Cold War politics.[28]

Thus, in the cultural climate of the post-war years, the value of the musical past required constant reevaluation. Leaving behind most of the musical past was, for Boulez, concomitant with the potential for serialism to revolutionize musical structure and aesthetics. Composers in the post-war years strongly believed they had to make space for their own innovations beyond the accomplishments of their predecessors. Ligeti differed from his Darmstadt colleagues in as much as he acknowledged influences, often from the distant musical past, but he simultaneously performed the same kind of erasure as his colleagues: by denying membership in any social milieu, Ligeti therefore suggested that his radical, avant-garde aesthetics grew only from his personal creativity.

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[26] See Fox, "Music after Zero Hour," 5-24; on the question of what continuity with the musical past remained in the Darmstadt *Ferienkurse*, see Borio and Danuser, eds., *Im Zenit der Moderne* Vol. I, 141-148.
[27] Fox, "Music after Zero Hour," 8.
[28] Amy Beal, "Negotiating Cultural Allies: American Music in Darmstadt, 1946-1956," *Journal of the American Musicological Society* 53/1 (Spring 2000): 105-139; Beal, *New Music, New Allies*. Though he discusses the situation in France primarily, see also Mark Carroll, *Music and Ideology in Cold War Europe* (Cambridge: Cambridge University Press, 2003).

On the one hand, the rhetoric of autonomy propagated by the Darmstadt composers allowed them to take an active role in shaping the reception of their works, specifically by suggesting that their works stemmed primarily from their own inspirations. On the other hand, the kind of outright denial of one's musical past expressed by Boulez above is reductive and inaccurate. The Darmstadt avant-garde remained deeply connected to and inspired by certain past musical influences despite the challenges of the *Stunde Null* aftermath, and despite often producing rhetoric to the contrary. Even Boulez qualified his earlier comments on the irrelevance of his predecessors later in the same article:

> The craft of the young composer thus depends on a heritage in whose choice he to some extent participates. There are what one might call transmittable and non-transmittable ones. One has to take into account what history invalidates and what it metamorphoses: a situation in constant flux, which may explain a certain kinship that crops up between different periods.[29]

Here, Boulez softens his stance to acknowledge that connections to one's musical heritage cannot be completely obliterated. But even so, he still suggests that the composer, partly due to the collective judgment of "history," maintains control over which portions of the past are worthy of one's continued attention.

To disentangle the complex issues surrounding the inheritance of the post-war avant-garde, I will make use of the notion of "historical memory." The concept of historical memory suggests that the past is always up for negotiation and re-use, though it is our present social groups that shape and structure our memory. The work of French

[29] Boulez, "Near and Far," *Stocktakings*, 144.

sociologist Maurice Halbwachs (1877-1945), which I will summarize in greater detail in the next section, reveals that social context affects one's memory of the past in at least two ways: first, one's milieu dictates *what* will be remembered. In the case of the Darmstadt avant-garde, their collective compositional goals largely determined which pieces and composers remained worthy of study, discussion and even emulation. When some works are chosen for performance, study and analysis, value judgments about which composers remain worthy are at least implied; in many cases, these judgments are strongly articulated in the writings of the Darmstadt composers. The activities of the Darmstadt avant-garde milieu at the yearly *Ferienkurse*, as well as their publications *Die Reihe* and *Darmstädter Beiträge zur Neuen Musik*, provide windows through which we can observe their renegotiation of the musical past.[30]

Secondly, the discourses in circulation amongst the Darmstadt avant-garde—particularly in the writings of Stockhausen, Eimert, Koenig, Adorno and Boulez—articulate *why* a particular composer or work was remembered. For example, Debussy's *Jeux* was read as an early example of statistical form, and Webern was hailed as the first composer to approach total serialization of the musical elements. The Darmstadt avant-garde's reconstruction of the musical past—both in terms of what was remembered and why it was remembered—reveals much more about their contemporary compositional and aesthetic concerns than about the works they analyzed. The subjective nature of these discourses is, by now, obvious; the Darmstadt composers found in the musical past

[30] For an exhaustive collection of documents and writings dealing with the *Ferienkurse*, see Borio and Danuser, eds., *Im Zenit der Moderne*.

the tools and inspirations they wished to find there. In fact, one of the central arguments of this dissertation is that the Darmstadt avant-garde composers—Ligeti included—kept the musical past close when they had a use for it.

In this dissertation I take up the topic of Ligeti's "historical memory" of the musical past. By this, I mean Ligeti's re-use of certain specific techniques from the musical past in his sound-mass works. In keeping with the fundamentally social dimension of Halbwachs's theory of memory, I focus particularly upon the perspective of Ligeti's milieu, which in the late 1950s and 1960s was the Darmstadt avant-garde.[31] In advancing his characteristic "rhetoric of autonomy," Ligeti seems to deny his connection to this milieu, but uncritically accepting that interpretation is problematic.[32] In fact, Ligeti was immersed in the activities of the Darmstadt circle immediately after his emigration in December of 1956. He lived with Stockhausen in early 1957, worked in the *Westdeutscher Rundfunk* electronic music studio with Stockhausen, Eimert and Koenig, wrote articles for *Die Reihe*, and taught lectures at the Darmstadt summer courses almost yearly beginning in 1959.[33] Ligeti may have been a latecomer to the post-war Darmstadt avant-garde, and he may have also viewed himself as a dissident to the reigning serial aesthetics. But Ligeti was far from the independent figure that he

[31] Jo Trillig, "György Ligeti und Darmstadt," *Von Kranichstein zur Gegenwart*, 341-346.
[32] Karl Kropfinger, "Ligeti und die Tradition," *Zwischen Tradition und Fortschritt: Über das musikalische Geschichtsbewußtsein*, ed. Rudolf Stephan (Mainz: B. Schott's Söhne, 1973),136-137.
[33] Ligeti, *Ligeti in Conversation*; Borio and Danuser, eds., *Im Zenit der Moderne*; Karlheinz Stockhausen, *Internationalen Ferienkursen für Neue Musik Darmstadt 1951-1996: Dokumente und Briefe* (Kürten: Stockhausen-Verlag, 2001).

cultivated in public interviews. When Ligeti wrote the sound-mass works, he was immersed in the creative atmosphere of the Darmstadt composers.

One of the goals of my dissertation is to show that Ligeti's ideas about the musical past—which composers are important and why—are activated by the Darmstadt milieu. Ligeti's historical memory amounts to his interaction with the musical past viewed through the lens of the Darmstadt avant-garde. Thus, Ligeti's personal judgment does not necessarily determine which historical influences are most important to him. This statement may seem paradoxical, particularly because Ligeti frequently discussed his sound-mass works and the inspirations behind them; it may appear that Ligeti's biography, interviews and work commentaries would be the most important resources for determining his relationship with the musical past. To the contrary, I focus more attention on the writings of Ligeti's contemporaries, considering his personal commentaries in a supporting role. The social dimension of Halbwachs's theories suggests that Ligeti's understanding of the musical past is available for analysis not through a biographical examination of his life, but primarily through the discourses of his milieu.

The second goal of this dissertation is to show that Ligeti applied contemporary discourses about the musical past during the composition of his sound-mass works. I forge connections between the discourses of the Darmstadt avant-garde, Ligeti's analytical writings and especially his sound-mass music. Analyses of Ligeti's works and manuscript sketches substantiate my claims that he absorbed and redeployed the

Darmstadt discourses in his compositions. Ligeti's sound-mass works represent his way of working through his complicated relationships to both the Darmstadt avant-garde and the musical past.

Ultimately, I will argue that, despite Ligeti's feigned distance from the avant-garde (e.g., his rhetoric of autonomy), and despite his aesthetic dissimilarity to his colleagues (e.g., the sound-mass music appears unprecedented), he depended on the ideas and discourses he encountered after his emigration. Moreover, interacting with the discourses of the Darmstadt avant-garde actually pointed the way forward in Ligeti's compositional development. This argument should not be overstated, since Ligeti's case is admittedly special compared to most of his Western European colleagues. Biographically speaking, he essentially had two milieus—the Hungarian culture of his youth, training and early years as a composer and the Western European context for his "mature" years. While I dwell on Ligeti's understanding of the musical past as determined by the socio-political context of Darmstadt in the late 1950s and 1960s, I also give attention to the way Ligeti absorbed and responded to discourses about Bartók's music, which circulated both in Hungary and in the West. Ligeti's renegotiation of Bartók's influence, in particular in the *Requiem*, shows that his Hungarian milieu formed the foundation for his compositional language; after his emigration, though, Bartók's music was an inspiration that was layered over with the more contemporary Darmstadt interest in Webern's music. Ligeti's negotiation between the concerns of both the Hungarian and Western European milieus demonstrates that historical memory is an

active process—he did not simply suspend and set aside his youthful interpretations of Bartók's music, but rather continued to reinterpret Bartók's significance according to his current social setting.

Halbwachs and the Concept of Collective Memory

Memory—particularly collective memory or cultural memory—is by now an enormously popular interpretive framework for humanities scholars. As Alon Confino notes, "The notion of "memory" has taken its place now as a leading term, recently perhaps the leading term, in cultural history."[34] Most scholars who work in the terrain of memory studies can trace their theoretical framework back through a lineage that begins with Maurice Halbwachs (1877-1945), a French sociologist who was perhaps the first scholar to analyze the ways in which socio-cultural contexts impacted memory. Halbwachs began his studies under the French philosopher Henri Bergson, who discussed time, space, and memory from the position of inner subjectivity. Eventually, Halbwachs's growing uncertainty about whether it was desirable to conceptualize individual experiences from a subjective position—that is, outside of socio-cultural frameworks—led him to oppose Bergson's belief in the essentially subjective nature of human experience.[35]

[34] Alon Confino, "Collective Memory and Cultural History: Problems of Methodology," *American Historical Review* 102/5 (Dec. 1997): 1386.
[35] Halbwachs's intellectual debts to Bergson are contextualized by Mary Douglas in "Introduction," *The Collective Memory*, trans. Francis Ditter and Vida Yazdi Ditter (New York: Harper, 1950), 1-5.

Halbwachs instead pursued a doctorate in sociology under a new mentor, Emile Durkheim, who strongly believed in the power of society to shape collective beliefs and behavior. Durkheim argued *contra* Bergson that our experience of time, space, and self are processed within socially constructed categories and therefore could not be products of individual psychology.[36] Applying this kind of analysis to memory in *Les cadres sociaux de la mémoire* (1925) and *La mémorie collective* (1945), Halbwachs develops the thesis that our ability to remember is due to our immersion in social frameworks, which make such self-understanding possible.[37] Halbwachs is careful to argue that certain groups to which we belong—family, religious groups and social classes—shape our memories rather than suggesting that the collective memory of society, as one undifferentiated group, can be realistically apprehended.[38] Still, the idea of an individual memory is an empty concept for Halbwachs; even if an individual memory is possible in

[36] Mary Douglas, "Introduction," *The Collective Memory*, 6-11; see also Jeffrey K. Olick, "From Collective Memory to the Sociology of Mnemonic Practices and Products," *Cultural Memory Studies*, ed. Astrid Erll and Ansgar Nünning, (Berlin: Walter de Gruyter, 2008), 155-157; Jean-Christophe Marcel and Laurent Mucchielli, "Halbwachs *mémoire collective*," same volume, 141-42.

[37] Maurice Halbwachs, *Les cadres sociaux de la mémoire* (New York: Arno Press, 1975); in English as *On Collective Memory*, trans. Lewis A. Coser (Chicago: University of Chicago Press, 1992). In Coser's translation, the first four chapters of Halbwach's text are excerpted, while the last three chapters and conclusions are translated *in toto*. Halbwachs's last work, *La mémoire collective* (Paris: A. Michel, 1997), was published posthumously after he was executed at Buchenwald in 1945; it appears in English as *The Collective Memory*, trans. Ditter and Ditter, (New York: Harper, 1950). It is somewhat less developed than *Les cadres sociaux* and stands as more of a response to criticism of the earlier work rather than a theory unto itself. Coser suggests that the text was provisional and unfinished and perhaps Halbwachs would not have even wanted it published (*On Collective Memory*, 2.) I refer to the English translations of both works.

[38] For example, see Halbwachs's most famous work, *La topographie légendaire des évangiles en terre sainte* (1941), (Paris: Presses universitaries de France, 1971); in English as "The Legendary Topography of the Gospels in the Holy Land," *On Collective Memory* (Coser), 193-235. It is a study of the Holy Land that argues that holy sites were made and re-made by generations of pilgrims and crusaders wishing to find Biblical holy sites. Halbwachs argues that Christians did not uncover the actual historical sites of the Bible as much as create a new topography of sites commemorating Biblical events, imbuing these constructs with the sacred aura they wished to find there.

an intuitive sense, like in a dream, we must engage with social structuring practices such as language and behavior to express our memory.[39] The waking person has access to names, words, and phrases that form a fundamental social structure for processing experiences. According to Halbwachs, "verbal conventions constitute what is at the same time the most elementary and the most stable framework of collective memory."[40] If Halbwachs's arguments still seem prescient, it is because both the structuralists and the post-structuralists have essentially embraced the idea that language is a fundamental way of structuring our interactions in the world.

Halbwachs never abandons the idea that social groups structure our memories. He does acknowledge, however, that we often imagine a memory is personal because it is made up of such a complex network of collective thoughts and structures that the network is almost indiscernible.[41] "Autobiographical memory" is Halbwachs's term for this type of inward, personal memory, which we may falsely believe reflects the individuality of our lived experiences. In contrast, he defines historical memory as an external, nationally oriented consciousness that is knowable through documents and other historical imagery rather than personal experience.[42] Halbwachs suggests that historical memories continue to have meaning, even if we have not experienced the event first-hand, because we live within a social structure shaped by that historical epoch. "The world of my childhood, as I recover it from memory, fits so naturally into the framework of recent history

[39] Halbwachs, *The Collective Memory* (Ditter and Ditter), 34-35.
[40] Halbwachs, *On Collective Memory* (Coser), 45
[41] Halbwachs, *The Collective Memory* (Ditter and Ditter), 45-49.
[42] Halbwachs, *The Collective Memory* (Ditter and Ditter), 50-54.

reconstituted by formal study because it already bears the stamp of that history.'[43] Thus an understanding of the past outside of one's autobiographical experiences is due to the social structures that were codified in the national, collective milieu at a particular time. My definition of historical memory takes off from here, though I de-emphasize the nationalistic aspect of Halbwachs's historical memory. I take Ligeti's interaction with the specifically musical past as my primary object of investigation, viewing the musical past through the lens established by his milieu. The Darmstadt avant-garde is Ligeti's main social and cultural reference point, though of course not his only one, in the late 1950s and 1960s. As such, the discourses of the Darmstadt avant-garde serve as the collective social framework in which Ligeti's memory of the musical past was imbued with particular meanings and functions.

Psychoanalytical Approaches: Influence and Anxiety in Music

A handful of musicologists have ventured into the terrain of memory studies, analyzing the social, cultural and political ramifications of particular works or musical practices,[44] but most discussions of musical influence tend to focus on the composer's biography and motivations rather than social, cultural and political factors. Perhaps the

[43] Halbwachs, *The Collective Memory* (Ditter and Ditter), 56.
[44] For example, Joy Calico, "*Jüdische Chronik*: The Third Space of Commemoration between East and West Germany," *Musical Quarterly* 88/1 (2005): 95-122; Tia DeNora, *Music in Everyday Life* (Cambridge: Cambridge University Press, 2000); José van Dijck, "Record and Hold: Popular Music Between Personal and Collective Memory," *Critical Studies in Media Communication* 23/5 (Dec. 2006): 357-374; William Howland Kenney, *Recorded Music in American Life: The Phonograph and American Popular Memory, 1890-1945* (Oxford: Oxford University Press, 1999); Amy Wlodarski, *The Sounds of Memory: German Musical Representations of the Holocaust, 1945-1965* (Ph.D. Diss., Eastman School of Music, 2005).

simplest way musical influence has been understood is as evidence of artistic immaturity.[45] Compositional exercises and pieces composed "in the style of" are examples of this kind of influence. Obvious traces of the techniques or aesthetics of one's predecessors are often signs, for the critic, that the music is derivative and weak. Hence, composers and critics often try to circumvent such perceptions by confining these pieces to a period of youth and training, as is the case with Ligeti's "Hungarian" works. A second way of contending with musical influence is to understand it as a deliberate *homage*. Joseph Straus describes this as the "generosity theory," where traces of influence are a sign that the composer acknowledges his debt to important precedents.[46] Charles Rosen reads Brahms's Second Piano Concerto as this type of *homage*—Brahms establishes an intimate link to Beethoven's Emperor Concerto through quotations that would have been evident to the educated listeners in his audience.[47] While the *homage* can be explicit and openly acknowledged, these types of pieces should only occupy a small portion of a composer's output, lest he or she seem derivative again.

For musicologists, questions of influence are fraught, since in the Western art music aesthetic, mature composers are expected to have an independent authorial voice. As Leonard B. Meyer says, "The almost frantic search for the new, so typical of the arts in the twentieth century, is not, as far as I can see, the consequence of some innate need for change and novelty; rather it results from our culture's *belief* in the productive and

[45] Joseph N. Straus, *Remaking the Past* (Cambridge, MA: Harvard University Press, 1999), 9.
[46] Straus, *Remaking the Past*, 10.
[47] Charles Rosen, "Influence: Plagarism and Inspiration," *19th Century Music* 4/2 (Autumn 1980): 87-100.

beneficent value of innovation."[48] The compulsion to avoid visible markers of one's compositional past, the "frantic search for the new," as Meyer says, has not, however, invalidated questions of musical influence. Within this admittedly modernist aesthetic context, psychoanalytic interpretations of musical influence appear particularly resonant, since psychoanalytical approaches neither deny the relevance of a composer's inheritance nor disparage his or her reputation with an analysis that admits to overt borrowing.

A number of musicologists have used the tools of psychoanalysis—drawn from the theories of Freud, Lacan or Zizek, for example—to interpret musical influence.[49] One model that has been particularly significant stems from the work of literary critic Harold Bloom, who developed a theory he called the "anxiety of influence" to explain the authorial fear that one's work will reveal its influences and its derivative nature.[50] As Kevin Korsyn summarizes, "The poet finds himself […] wondering if he has arrived too late, if perhaps everything has already been said. That is the anxiety of influence."[51] As the poet contends with the influence of his or her precursors, Bloom argues that poems become intertextual objects, not closed works. Thus, poems point toward any number of

[48] Leonard B. Meyer, "Innovation, Choice, and the History of Music," *Critical Inquiry* 9/3 (March 1983): 521. Emphasis Meyer's.
[49] For example, Naomi Cumming, "The Horrors of Identification: Steve Reich's *Different Trains*," *Perspectives of New Music* 35 (1997): 129-52; Kevin Korsyn, "Toward a New Poetics of Musical Influence," *Music Analysis* 10/1-2 (March-July 1991): 3-72; Sarah Reichardt, *Composing the Modern Subject: Four String Quartets by Dmitri Shostakovich* (Burlington, VT: Ashgate, 2008); Straus, *Remaking the Past*.
[50] Harold Bloom, *Anxiety of Influence*: *A Theory of Poetry* (London: Oxford University Press, 1973). Bloom further develops the theory in a succession of titles: *A Map of Misreading* (1975), *Kaballah and Criticism* (1975), *Poetry and Repression: Revisionism from Blake to Stevens* (1976), and *Agon: Toward a Theory of Revisionism* (1982).
[51] Korsyn, "Toward a New Poetics," 7.

predecessors and are marked by the author's struggle to repress his strongest influences and express his creative self.[52]

Straus engages this model in *Remaking the Past* to illustrate relationships between tonal works and various early atonal works of Schoenberg, Webern, Berg, Bartók, and Stravinsky. He finds that residues of tonality—sonata forms, triads, motives—while somewhat neutralized in the atonal works of the aforementioned composers, are evidence of their struggle to clear creative space for their own contributions.[53] Korsyn also makes use of Bloom's anxiety of influence theory to investigate Brahms's misreading of Chopin, applying all six of Bloom's strategies for misreading.[54] Korsyn proceeds from conspicuous allusion to an analysis of Brahms's deeper, subconscious appropriation of elements from the Chopin precursor text. In some cases, Korsyn is concerned with the absence of allusions to Chopin, in as much as absence represents a subconscious swerve away from the precursor, and thus Brahms's attempt to repress Chopin's influence as much as possible. The repression of one's precursors, in order to clear creative space for one's own accomplishments, represents the strongest misreading of earlier texts.

As the term "repression" suggests, Bloom's theory of poetic misreading is deeply indebted to Freud, telling of artists, poets, and composers locked in an Oedipal struggle against their precursors.[55] In Bloom's theory, as Richard Taruskin points out, "success as

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[52] For discussion of Bloom's theory, see Straus, *Remaking the Past*, 12-18; Kevin Korsyn, "Toward a New Poetics," 5-16; and Richard Taruskin, "Review of *Remaking the Past* and 'Toward a New Poetics of Musical Influence,'" *Journal of the American Musicological Society* 46/1 (Spring 1993): 114-138.
[53] Straus, *Remaking the Past*, 1-20.
[54] Korsyn, "Toward a New Poetics," 3-72.
[55] Straus, *Remaking the Past*, 12; Korsyn, "Toward a New Poetics," 8.

a poet is achieved by parricide."[56] Many of Bloom's revisionary ratios are themselves Freudian, as Korsyn explains: "clinamen" has much in common with Freud's reaction-formation concept, "daemonization" includes Freudian tropes of hyperbole and defense of repression, and "apophrades" is related to Freud's introjection and projection.[57] While the psychological struggle to repress one's influences may describe a composer's experience, it is a difficult struggle for the analyst to retrospectively dissect. In Bloom's (and Freud's) theory, the strongest misreadings repress the precursors most successfully; thus the strongest works show the least evidence of similarity to precursors. If the absence of discernable influence is indeed the mark of the strongest repression of one's precursors, the question of influence is almost moot. As Taruskin says, "If similarity is evidence of influence but dissimilarity can be evidence of a stronger influence … then just what can disprove the theory?"[58] The analyst could argue for influence—in terms of repression—between practically any two works as long as the argument is plausible and well-written enough so as to be convincing.[59]

The Freudian idea that one's strongest influences are the most deeply repressed, and thus least available, creates a serious methodological problem for analyzing memory as well. As Olick and Robbins explain, "Freud had argued that the individual's unconscious acts as a repository for all past experiences. Forgetting, rather than remembering, is what takes work in the forms of repression and the substitution of

[56] Taruskin, "Review," 115.
[57] Korsyn, "Toward a New Poetics," 34-58.
[58] Taruskin, "Review," 119.
[59] Taruskin suggests a similar conclusion; see "Review," 119.

"screen" memories that block access to more disturbing ones."[60] Perhaps due to a similar criticism, Halbwachs deliberately positions himself against Freud's almost contemporary psychoanalytic theories, arguing that social frameworks shape and store our memories rather than our psychological apparatus. According to Halbwachs, memory is an active, available process owing to its fundamentally social dimension.

Despite their differences, positing a sharp dichotomy between Halbwachs and Freud is somewhat false—after all, Freud's theories are an account of how social forces require us to channel, repress, and deflect our primal impulses. Nevertheless, Freud's account describes individual responses to those social and cultural forces, which are uncovered through psychoanalysis. Halbwachs argues to the contrary that it is the social groups to which we belong, not psychoanalysis, which inspire us to return to our memories. Since individual memories do not exist outside of social frameworks, it is the concerns of the groups in which we are members that direct and structure what is remembered and how it is remembered.[61] Along this line, I contend that a more reliable way to understand Ligeti's influences and memories is to steer away from biographical or psychoanalytical readings, instead analyzing his interactions with the concerns and discourses important amongst his social groups.

[60] Jeffrey Olick and Joyce Robbins, "Social Memory Studies From Collective Memory to the Historical Sociology of Mnemonic Practices," *Annual Review of Sociology* 24 (1998): 109.
[61] See Halbwachs, *On Collective Memory* (Coser), 51-60.

The Evolution of Halbwachs's Theory of Collective Memory

Though Halbwachs was the first to systematically develop and use the concept of collective memory, he worked within an intellectual community that shared his concerns. Early in his career, he found a receptive audience in colleagues Lucien Febvre and Marc Bloch at the University of Strasbourg, who reviewed his *Les cadres sociaux* (1925) favorably; when Febvre and Bloch founded the journal *Annales d'histoire économique et sociales* in 1929, Halbwachs sat on the editorial board. The so-called *Annales* School that emerged from this milieu, as Alon Confino states,

> […] called for a new kind of history that explored, beyond the usual political history of states and kings, the social and economic structures of a society as well as its "mental tools" (*outillage mental*), the system of beliefs and collective emotions with which people in the past understood and gave meaning to their world. This history of mentalities (*histoire des mentalitiés*) provided a whole new approach to the study of the past, as it took seriously the history of collective representations, myths, and images.[62]

Scholarly interest in the flexible, shifting conditions that shape collective mentality and memory remained a topic of interest, and French historians and sociologists of the mid-twentieth century continued to focus attention on habitual behaviors, rhetorical structures, attitudes and traditions in culture. It is possible to understand the work of Philippe Ariès, Michel Foucault and Pierre Bourdieu, for example, as an extension of the concerns and methodology of the *Annales* School.[63]

[62] Alon Confino, "Memory and the History of Mentalities," *Cultural Memory Studies*, 77-78.
[63] See Patrick Hutton, *History as an Art of Memory* (Hanover: University of Vermont Press, 1993).

This history of collective mentality finds its fullest (and perhaps most famous) expression in Pierre Nora's eight-volume tome *Les lieux de mémoire* (1984-1992).[64] As editor and creative director, Nora supervised historians as they wrote on topics that shaped French history and culture, from monuments to the *ancien régime*, and from gastronomy to generations. Nora explains that the project began as a way of thinking about French history in spatial terms rather than as events on a timeline, but grew into a project of locating places of memory that serve as symbolic repositories of French culture. As work on the project progressed, he became increasingly interested in "constructing" places of memory whose significance could be theorized beyond mere historical realities.[65] According to Nora,

> A *lieu de mémoire* is any significant entity, whether material or non-material in nature, which by dint of human will or the work of time has become a symbolic element of the memorial heritage of any community.[66]

Nora emphasizes that places of memory (*lieux de mémoire*) are a mixture of symbolic, functional and material elements.[67] Most importantly, *lieux* are formed through a social group's conscious willingness to create and re-create memories, whether through monuments, ceremonies, artworks or conventions of social behavior.

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[64] Pierra Nora, *Les lieux de mémoire*, 2nd ed. (Paris: Gallimard, 1997); condensed in English as *Realms of Memory: Rethinking the French Past*, 3 vols., trans. Arthur Goldhammer (New York: Columbia University Press, 1994-1996). I refer throughout to the English edition.
[65] Nora, *Realms of Memory*, xvii.
[66] Nora, *Realms of Memory*, xvii.
[67] Nora, *Realms of Memory*, 14.

Much of the recent scholarship in memory[68] is indebted to the *Annales* lineage, which connects Halbwachs to Nora and the later twentieth century French historiographical tradition. Yet the body of work that falls under the rubric "collective" or "cultural memory" studies is increasingly diverse. Some scholars have asked how memory is performed, enacted and codified in a culture, with studies of mimesis, repetition and bodily gesture addressing this angle.[69] Furthermore, studies that read artworks and literature as repositories of cultural memory necessarily address the process by which memory is perpetually re-presented to the audience.[70] A prominent contingent of scholars studies the ways artworks and monuments shape contemporary memory of traumatic events, especially the Holocaust.[71] One major question amongst those who

[68] For summaries of this scope of literature, see Erll and Nünning, eds., *Cultural Memory Studies*; Patrick Hutton, "Recent Scholarship on Memory and History," *The History Teacher* 33/4 (August 2000): 533-548; Kerwin Lee Klein "On the Emergence of Memory in Historical Discourse," *Representations* 69 (Winter 2000): 127-150; Olick and Robbins, "Social Memory Studies," 105-140; Susannah Radstone, ed., *Memory and Methodology* (Oxford: Berg, 2000), 1-22.

[69] Pim den Boer, "Loci memoriae—*Lieux de mémoire*," *Cultural Memory Studies*, 19-25; Paul Connerton, *How Societies Remember* (Cambridge: Cambridge University Press, 1989); Hutton, *History as an Art of Memory*.

[70] *The Art of Memory/The Loss of History* (New York: New Museum of Contemporary Art, 1985); Jan Assman, "Collective Memory and Cultural Identity," trans. John Czaplicka, *New German Critique* 65 (Spring-Summer 1995): 125-133; Andreas Huyssen, *Twlight Memories: Marking Time in a Culture of Amnesia* (New York: Routledge, 1995); Renate Lachmann, "Mnemonic and Intertextual Aspects of Literature," *Cultural Memory Studies*, 301-310.

[71] Monika Bohm-Duchen, ed., *After Auschwitz: Responses to the Holocaust in Contemporary Art* (London: Northern Centre for Contemporary Art, 1995); Julia Epstein and Lori Hope Lefkovitz, eds., *Shaping Losses: Cultural Memory and the Holocaust* (Urbana: University of Illinois Press, 2001); Stephen Feinstein, "Art after Auschwitz," *Problems Unique to the Holocaust*, ed. Henry James Cargas (Lexington: University Press of Kentucky, 1999), 152-168; Shelley Hornstein and Florence Jacobowitz, eds., *Image and Remembrance: Representation and the Holocaust* (Bloomington: Indiana University Press, 2003); Caroline Wiedmer, *The Claims of Memory: Representations of the Holocaust in Contemporary Germany and France* (Ithaca, NY: Cornell University Press, 1999); James Young, *Writing and Rewriting the Holocaust* (Bloomington: Indiana University Press, 1988); Young, *The Texture of Memory: Holocaust Memorials and Meaning* (New Haven, CT: Yale University Press, 1993); Young, *At Memory's Edge: After-Images of the Holocaust in Contemporary Art and Architecture* (New Haven, CT: Yale University Press, 2000); Young, "The Texture of Memory: Holocaust Memorials and History," *Cultural Memory*

study commemoration tends to be "What messages are represented in a culture's monuments?" This is because, as James Young has said, as a society we have an "inability to grasp the Holocaust outside of the ways it has been passed down."[72] Studies that analyze Holocaust representations in monuments and memorials are broadly concerned with exploring the politics of memory—that is to say, confronting the dual questions of what is remembered and how it is remembered can provide insight into the dialectical relationships between the power structures, social value systems and identity politics at work in the culture.

A number of scholars have pointed out, however, that certain methodological problems are raised by studies of how cultural memory is represented in artworks, literature, monuments and so forth. As Confino says, "There is too often a facile mode of doing cultural history, whereby one picks a historical event or a vehicle of memory, analyzes its representation or how people perceived it over time, and draws conclusions about 'memory' (or 'collective memory')."[73] According to the critiques of Confino and others, scholarship that reads cultural products in terms of their represented meanings risks making a theoretically unsound leap from an individual interpretation to a collective memory. Thus, despite their apparent attention to social structure, collective memory

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Studies, 357-365; Jay Winter, "Sites of Memory and the Shadow of War," *Cultural Memory Studies*, 61-74; Wlodarski, *The Sounds of Memory*; Nancy Wood, *Vectors of Memory: Legacies of Trauma in Postwar Europe* (Oxford: Berg, 1999).

[72] Young, *At Memory's Edge*, 2.

[73] Alon Confino, "Collective Memory and Cultural History," 1386-1403; see also Wulf Kansteiner, "Finding Meaning in Memory: A Methodological Critique of Collective Memory Studies," *History and Theory* 41 (May 2002): 179-197; Kansteiner and Harald Weilnböck, "Against the Concept of Cultural Trauma," *Cultural Memory Studies*, 229-240; Kerwin Lee Klein, "On the Emergence of Memory."

studies risk ignoring or at least misapprehending the social forces that underwrite cultural representations of the past.

At the center of this methodological pitfall is the elision of individual memory with collective, cultural memory. In fact, the slippage between the individual and collective levels is a methodological problem in nearly all collective memory studies, Halbwachs included.[74] Most writers who invoke Halbwachs agree that memory is a collective faculty, or at least is informed by social environment. The disagreement comes over how best to theorize collective memory. Under what methodological circumstances is the collective mentality of a social group knowable? For Halbwachs, analyzing the memories of an individual provides a somewhat uncomplicated window into the concerns of the group. Later scholars have problematized this individual-to-collective transfer, suggesting that, as Wulf Kansteiner has said, "the fact that individual memory cannot be conceptualized and studied without recourse to its social contexts does not necessarily imply the reverse, that is, that collective memory can only be imagined and accessed through its manifestations in individuals."[75] While there is no clear methodological solution to this problem, I aim to avoid a simplistic individual-to-collective transfer by analyzing the discourses and concerns of Ligeti's milieu. The collective, social dimension of Ligeti's historical memory is located in his interaction with these discourses

[74] See Jan Assman, "Collective Memory and Cultural Identity;" Michael Kenny, "A Place for Memory: The Interface Between Individual and Collective History," *Comparative Studies in Society and History* 41/3 (July 1999): 420-437; Jeffrey Olick, "Collective Memory: The Two Cultures," *Sociological Theory* 17/3 (Nov. 1999): 333-348; Radstone, ed., *Memory and Methodology*; Barry Schwartz, "The Social Context of Commemoration: A Study in Collective Memory," *Social Forces* 61/2 (Dec. 1982): 374-397.
[75] Wulf Kansteiner, "Finding Meaning in Memory," 185.

in his writings and music. Likewise, I seek to avoid a facile reading of Ligeti's music that positions him uncritically in the Darmstadt avant-garde, ignoring his specific biography and aesthetics. Instead, my analysis will show that Ligeti's Darmstadt years involved a constant negotiation between his personal aesthetics and the concerns of his new milieu.

Scholars who work under the umbrella of cultural memory studies deliberately play on another methodological tension, the one between the concepts of history and memory.[76] History implies a factual base, a sense of well-researched objectivity: certain events did take place, and they are important. Memory, on the other hand, yields to subjectivity: as Olick and Robbins note, "memory is a central, if not the central, medium through which identities are constituted."[77] Memories do not erase the authorial presence and, since they are perceptions rather than "facts," they are prone to all kinds of inaccuracies and distortions. Nora's *Lieux de mémoire* is a case in point: he never intended to write an objective, factual account of French history, but rather to describe the literal and metaphorical sites that have allowed the French people to subjectively represent and remember their own histories.

The opposition between history and memory is a prominent feature of Halbwachs's text, particularly because his concept of history is drawn from a nineteenth-

[76] On this issue, see Joyce Appleby, Lynn Hunt and Margaret Jacob, *Telling the Truth about History* (New York: Norton, 1994); Patrick Geary, *Phantoms of Remembrance: Memory and Oblivion at the End of the First Millennium* (Princeton: Princeton University Press, 1994); Hutton, *History as an Art of Memory*; Pierre Nora, *Realms of Memory*; Michael S. Roth, *The Ironist's Cage: Memory, Trauma and the Construction of History* (New York: Columbia University Press, 1995).
[77] Olick and Robbins, "Social Memory Studies," 133.

century model that sought a quasi-scientific basis for historical methods and writing. Halbwachs's turn toward sociology and collective memory studies, along with the contemporary emergence of the *Annales* School, eroded this rigid, positivist historiographical method. Halbwachs's project reflects an early twentieth century "crisis of history," during which scholars began to argue that the historians should study the way events and people were perceived at a particular time rather than to codify a "once-and-for-all" account with consummate scientific rigor and objectivity. The revival of memory studies after World War II likewise reflects a second crisis of history. As Susannah Radstone points out, the aftermath of the Holocaust set forth the imperative to "always remember." Yet this dictum is paradoxically set against the common acknowledgement that it is impossible to imagine an adequate way to represent and memorialize an event as horrific as the Holocaust.[78]

Perhaps because it is readily acknowledged that historiography in no way embodies the uncomplicated "objectivity" laid out above, scholars have recently become less interested in the history/memory dichotomy. As Astrid Erll writes,

> The whole question of "history and/or/as memory" is simply not a very fruitful approach to cultural representations of the past. […] I would suggest dissolving the useless opposition of history vs. memory in favor of a notion of different modes of remembering in culture. This approach proceeds from the basic insight that the past is not given but must instead be continually re-constructed and re-presented.[79]

[78] Radstone, *Memory and Methodology*, 5.
[79] Erll, *Cultural Memory Studies*, 7.

In some ways, this recognition brings us back to the core of Halbwachs's theory; the real potential in the historical memory model lies in adopting the belief that all types of memory are deeply influenced by social context. Adopting Halbwachs's framework not only allows access to Ligeti's influences through the collective milieu in which he was immersed, but also emphasizes the way the musical past was constantly renegotiated and re-presented by the Darmstadt composers.

Historical Memory in Ligeti's Sound-Mass Music

As evidence of the Darmstadt composers' constant renegotiation of the musical past, Chapter Two explores their obsession with Debussy's ballet *Jeux*. Herbert Eimert, the director of the *Westdeutscher Rundfunk* studio and an early friend of Ligeti's in Cologne, wrote an extensive analysis of *Jeux* in *Die Reihe* with which Ligeti was almost certainly familiar. Karlheinz Stockhausen, one of the *de facto* leaders of the Darmstadt avant-garde, also wrote an extensive analysis of *Jeux*, using it to demonstrate and develop his ideas of statistical form. The Darmstadt composers' engagement with Debussy's piece, which was more or less forgotten before their revival of it, demonstrates how they attached new meanings and significance to certain historical objects. Ligeti absorbed and responded to this discourse around *Jeux*—his first sound-mass works *Apparitions* (1958-59) and *Atmosphères* (1961) bear musical traces of the formal analysis advanced by Eimert and the statistical form concepts advanced by Stockhausen.

Chapter Three turns to the recent musical past, examining the explosion of interest in electronic music technology in the post-war years. Ligeti was a latecomer to the electronic music scene, which had been in full swing for about nine years before his emigration to the West in late 1956. However, he landed an internship almost immediately in early 1957 at the German radio branch in Cologne, a leading center for electronic music research and production. Ligeti's experiments with electronic music were penetrating and important, and this chapter shows that the intellectual history of electronic music, which he internalized during his internship at the *Westdeutscher Rundfunk*, deeply shaped his sound-mass works. In particular, my analysis of Ligeti's unfinished electronic work *Pièce électronique Nr. 3* (1957) alongside his acoustic work *Atmosphères* shows his interaction with the electronic discourses and techniques that were established by his colleagues Eimert, Stockhausen and Gottfried Michael Koenig. Ligeti's *Atmosphères*, despite being an acoustic work, responds to the collective representation of electronic music in circulation amongst the Darmstadt avant-garde.

Though electronic music was a relatively recent musical development, Ligeti's transfer of electronic techniques shows first and foremost, as per Halbwachs's analysis, that a framework of shared values and discourses are a necessary part of processing our experiences. In fact, I argue that Ligeti would not have been able to compose *Atmosphères* in just the way that he did without recourse to the electronic music discourses that he internalized at the Cologne studio. Conceptualizing Ligeti's interaction with electronic music techniques in terms of historical memory also reinforces

the idea that the negotiating the discourses of one's social milieu is an active process. Clearly, Ligeti did not simply imitate the kinds of pieces that his colleagues were composing—his three electronic works as well as *Atmosphères* bear the stamp of his interaction with collective notions of electronic music, but more strongly reveal his re-negotiation of these ideas for his own use in his acoustic sound-mass works.

Chapter Four demonstrates Ligeti's continued reliance on contemporary interpretations of the musical past with a discussion of the Darmstadt composers' collective understanding of the musical concept of *Klangfarbenmelodie*. Since Schoenberg coined the term in 1911, it has been received as an ambiguous, yet potentially revolutionary musical concept. Further complicating the reception history of the term, confusion emerged early over whether Schoenberg or his student Anton Webern had truly realized the concept of *Klangfarbenmelodie* in his music. Amongst the Darmstadt composers, both musical representations of *Klangfarbenmelodie* were important—Theodor Adorno, Pierre Boulez and Luigi Nono interacted with Schoenberg's harmonic representation of *Klangfarbenmelodie* in Op. 16 No. 3 as well as Webern's melodic understanding of the concept. Ligeti likewise exploited both definitions of the term, applying compositional techniques derived from Schoenbergian *Klangfarbenmelodie* in *Lontano* (1967) and further developing Webernian representations of *Klangfarbenmelodie* the *Cello Concerto* (1966).

Chapter Four also acknowledges Ligeti's growing reputation as a scholar and as a composer. Since his music clearly interacted with issues of timbre, Ligeti was invited to

lecture, give radio broadcasts and teach courses on the use of timbre in music. Thus, his work shaped the discourse on *Klangfarbenmelodie* in addition to being *shaped by* that discourse. Nevertheless, Halbwachs's socially construed idea of historical memory is still apparent in the fact that, in his writings and in his compositions, Ligeti perpetuated the dichotomous reception history of the term, which had held from the start. Furthermore, Ligeti's interest in the issue of timbre and his expertise on the topic of *Klangfarbenmelodie* are a reflection of the Darmstadt composers' collective interest in precisely defining timbre and deploying it to new ends in their compositions.

In Chapter Five, Ligeti's appropriation of well-established discourses is even more apparent. I show how Ligeti capitalized upon the popularity of Webern amongst the Darmstadt avant-garde, becoming an expert on his music almost immediately after his emigration. Ligeti's Webern analyses discussed similar issues as his colleagues' analyses, but Ligeti added a new angle to the established discourses by connecting Webern to Bartók through their use of symmetrical musical figures. There was no precedent for linking Webern and Bartók's music in either the discourse of the Darmstadt avant-garde or in contemporary interpretations of Bartók's music in Hungary. In fact, the two composers were often viewed as opposites in the Cold War politics of the day.

Ligeti's unprecedented linkage of Bartók and Webern is an unmistakable mark of his difference from his Darmstadt colleagues. Specifically, Ligeti's expertise and interest in Bartók's music were remnants of his earlier immersion in Hungarian culture. Amongst his new Darmstadt avant-garde milieu, however, Bartók's music had fallen out of favor.

Sensitive to this new cultural context, Ligeti carefully curtailed his interaction with Bartók's music after his emigration, without abandoning it entirely: he addressed only Bartók's use of symmetry and presented these ideas in the disarming context of his Webern analyses. This move shows that Ligeti was shaped by contemporary Western European interpretations, and the Cold War politics behind them, which had governed the reception of Bartók's music amongst the Darmstadt avant-garde. After his emigration, Ligeti transferred his scholarly concerns from Bartók to Webern through the issue of symmetry, which is important in both their music. Moreover, Ligeti's *Requiem* (1963-65) indicates how he strove to reconcile the Hungarian and Western European discourses about Bartók's music by mediating them through Webern's music.

Given the multiple associations between historical memory and the Holocaust, and given Ligeti's identity as a Jew who survived the war, the Holocaust runs as a palpable subtext to this dissertation. In fact, very few figures who appear in this dissertation were untouched by the Nazi terror—Adorno, Bartók, Schoenberg and others were forced to emigrate; Webern and Walter Benjamin died tragic and unnecessary deaths due to persecution during the war; Halbwachs was executed at a concentration camp, as were Ligeti's father and brother—a fate from which Ligeti himself narrowly escaped. I address the issue of the Holocaust and historical memory most directly with regard to Ligeti's *Requiem*. From our present position I argue that the piece can be understood as a memorial work. The *Requiem* furthermore bears marks of Ligeti's

participation in the collective process of coming to terms with the Holocaust in post-war Germany.

My analysis of Ligeti's historical memory aims to describe the ways social groups activated his memories and shaped his interpretations of the musical past. It is possible that Ligeti experienced his memories of the musical past with the continuity characteristic of autobiographical memory; it is likely that for him, the sound-mass works were the culmination of many years of personal artistic development. Yet we must acknowledge that we cannot recover the continuity of Ligeti's memory. Ligeti's historical memory in his sound-mass works remains, for us, a discontinuous assemblage of influences based on the values of his social group. This kind of discontinuity and paradox is not necessarily uncommon around objects or places that embody memories. As Nora points out, places of memory remain culturally important because of their potential to change and be re-inscribed with new meanings.[80] As Ligeti's sound-mass works demonstrate, the reinterpretation of the musical past that took place amongst the Darmstadt avant-garde—their process of re-inscribing new meanings on older composers and works—was an essential process of reckoning, which informed even the most avant-garde works.

[80] Pierre Nora, "Between Memory and History: *Les lieux de mémoire*," *Representations* 26 (Spring 1989): 19.

Chapter 2

Jeux at Darmstadt

Jeux, Debussy's last orchestral work, was written in 1912 and premiered by Diaghilev's *Ballets Russes* in Paris on May 15, 1913, just two weeks before Stravinsky's *Rite of Spring*.[1] *Jeux* was overshadowed by the riotous premiere of the *Rite*, though admittedly, audiences and critics were ambivalent about *Jeux* from the start.[2] Robert Orledge suggests that *Jeux* may have suffered not only from less spectacle than the *Rite*, but also from insufficient rehearsal time, since the choreography and music for the *Rite* were much more demanding on the dancers and orchestra. Compounding this problem, the ballet's choreography, which was formulated by Nijinsky according to the eurhythmic principles of Jacques-Dalcroze, was by all accounts uninspired. Debussy was unhappy with the choreography and most critics who wrote about the premiere were likewise critical of the choreography, taking little notice of the music.

Jeux overcame the ambivalent reception of audiences and critics in the post-war years, when it became a touchstone for the Darmstadt avant-garde. As Jonathan Kramer says, the work became "seminal to the Darmstadt composers,"[3] and Marianne Wheeldon suggests that "the significance accorded to *Jeux* extended far beyond Debussy's *œuvre*."[4]

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[1] Robert Orledge, *Debussy and the Theatre* (Cambridge: Cambridge University Press, 1982), 168.
[2] The following account is drawn from Orledge, *Debussy and the Theatre*, 168-172.
[3] Jonathan Kramer, "Moment Form in Twentieth Century Music," *The Musical Quarterly* 64/2 (April 1978): 189.
[4] Marianne Wheeldon, *Interpreting Discontinuity in the Late Works of Claude Debussy* (Ph.D. Diss., Yale University, 1997), 9.

Pierre Boulez, one of the spokesmen of the emerging avant-garde,[5] remarked in 1958 that, "Since this first failure, there has been a kind of 'curse' on *Jeux* and it was rarely played until it was noticed, quite recently, that it is one of Debussy's most remarkable works."[6] *Jeux* was performed, presumably music only, at Darmstadt on July 14, 1956.[7]

Ligeti sensed *Jeux*'s renown almost immediately after his emigration: "I cannot recall the occasion when I heard *Jeux* for the first time but in Cologne people kept speaking about it."[8] As Ligeti's account suggests, *Jeux* was very much in the air in the late 1950s. It is not surprising that the work was rediscovered in the post-war years—*Jeux* was a fertile piece for the kind of reinterpretation the Darmstadt circle brought to it. The near absence of a reception history at the time of *Jeux*'s premiere meant that the piece was relatively unburdened by past performances, interpretations, analyses and cultural significance. As Boulez claimed, "[…] Finally, now that barbarism has drawn in its spines and hypnotism has calmed its paroxysms, the reverberations of *Jeux* still seem to me mysteriously unspent."[9] The Darmstadt composers capitalized upon the fact that *Jeux* was a blank slate, discovering in the piece the qualities they wished to formulate and reproduce in their own music.

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[5] For more on Boulez's status within and influence upon the post-war avant-garde, see Robert Piencikowski's "Introduction" in Pierre Boulez, *Stocktakings from an Apprenticeship*, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), xiii-xxix.
[6] Boulez, "Claude Debussy: Entries for Musical Encyclopaedia," *Stocktakings*, 274.
[7] Karlheinz Stockhausen, *Internationalen Ferienkursen für Neue Musik Darmstadt 1951-1996: Dokumente und Briefe* (Kürten: Stockhausen-Verlag, 2001), 120; Gianmario Borio and Hermann Danuser, eds., *Im Zenit der Moderne* Vol. III (Freiburg im Breisgau: Rombach, 1997), 579.
[8] György Ligeti, *Ligeti in Conversation with Péter Várnai, Josef Hausler, Claude Samuel, and Himself* (London: Eulenberg, 1983), 42.
[9] Boulez, "Debussy," *Stocktakings*, 21.

In this chapter, I argue that the prominence of *Jeux* in the collective imagination of the Darmstadt avant-garde influenced the development of Ligeti's sound-mass style. Particularly important to Ligeti were two readings of the piece advanced by his colleagues at Darmstadt: Stockhausen's statistical form analysis in his 1954 article "From Webern to Debussy: Remarks on Statistical Form"[10] and Herbert Eimert's 1959 *Die Reihe* article analyzing the work.[11] Ligeti's interaction with *Jeux* was almost certainly mediated through the discourses established by Stockhausen and Eimert. After his emigration in December of 1956, Ligeti stayed for a time at Stockhausen's apartment in Cologne while he worked in the electronic music studio at the *Westdeutscher Rundfunk* (*WDR*), which was under the direction of Eimert.[12] Ligeti may have been particularly impressionable at this time, just after his flight to the West. By his own admission, he felt in a hurry to catch up with the discourses and advances of the avant-garde, since he had had few opportunities to hear and study new repertoire in censored, Communist-governed Hungary.[13] "In the first week [in Cologne] I heard hundreds of recorded pieces at the *WDR* that I did not know—from Schoenberg to Webern to the music of my

[10] Karlheinz Stockhausen, "Von Webern zu Debussy: Bermerkungen zur statistischen Form," *Texte zur electronischen und instrumentalen Musik* Vol. I (Cologne: DuMont Schauberg, 1963), 75-85.
[11] Herbert Eimert, "Debussy's *Jeux*," trans. Leo Black, *Die Reihe* 5 (English ed. 1961): 3-20.
[12] Ligeti, "Mein Kölner Jahr 1957," *Gesammelte Schriften* Vol. II, ed. Monika Lichtenfeld (Mainz: Schott, 2007), 29-32; Ligeti, '*Träumen Sie im Farbe?' György Ligeti im Gespräch mit Eckhard Roelcke* (Vienna: Paul Zsolnay, 2003), 88; Ligeti, *Ligeti in Conversation*, 34. Ligeti dedicated *Apparitions* to Eimert as an expression of gratitude for the opportunity to work in the electronic music studio of the *WDR*.
[13] See Ligeti, *Ligeti im Gespräch mit Eckhard Roelcke*, 61-81. See also Ligeti, *Ligeti in Conversation*, 88-89; Ligeti, "Auswirkungen der elektronischen Musik auf mein kompositorisches Schaffen," *Gesammelte Schriften* II, 86; Richard Steinitz, *György Ligeti: Music of the Imagination* (Boston: Northeastern University Press, 2003), 84-85; Richard Toop, *György Ligeti* (London: Phaidon, 1999), 51. Friedemann Sallis questions the degree to which Ligeti was truly isolated and unaware of Western avant-garde musical developments in *An Introduction to the Early Works of György Ligeti* (Cologne: Studio, 1996), 200-204.

contemporaries. It was a wonderful new world for me, a window onto a world of new music."[14]

More specifically, many of Ligeti's comments about *Jeux* are indebted to Eimert and Stockhausen's analyses, and there is much evidence to suggest that Ligeti knew these articles well.[15] Throughout the chapter, I use close readings of Eimert and Stockhausen's analyses of *Jeux* to show how Ligeti synthesized the concepts and discourses contained therein and reapplied them musically in *Apparitions* (1958-59) and *Atmosphères* (1961). First, I show how Eimert's formal analysis helped Ligeti clarify his own evolution beyond traditional forms. Second, I argue that Stockhausen's statistical analysis gave Ligeti the tools to begin writing "timbral" music by showing how one might prioritize the overall shape and boundaries of sound masses rather than the individual elements that comprised them. Eimert and Stockhausen's insights form the conceptual foundation for Ligeti's early sound-mass works.

Form and Formlessness in *Jeux*

For the Darmstadt composers *Jeux* embodied a new kind of form, albeit an ambiguous one. As Eimert observes, "One can see what Debussy's musical form 'no

[14] Ligeti, "Mein Kölner Jahr 1957," *Gesammelte Schriften* II, 31. "In den ersten Wochen hörte ich Hunderte von Stücken auf Tonband im WDR, denn ich kannte nichts—weder Schönberg noch Webern die Musik meiner Altersgenossen. Es was eine wunderbare neue Welt für mich, die Öffnung zur Welt der Neuen Musik."

[15] See in particular the unpublished manuscript "Zum Debussy—Jeux—Vortrag" in the György Ligeti Collection, Paul Sacher Foundation.

longer' is; it is much harder to say what it is."[16] Eimert argues that traditional theoretical concepts such as theme, period, and formal scheme are no longer applicable to *Jeux*. In a 1978 interview, Ligeti spells this out even more clearly: "What is so remarkable about *Jeux* is that it has no 'officially acceptable' form. To go back to an earlier expression of mine, it has not got its tie all neatly tied. It is neither a rondo nor a sonata form, nor an A-B-A ternary form, nor anything else."[17]

Despite the difficulty understanding *Jeux* as any traditional form, Eimert does not give up on articulating the form of *Jeux*:

> When a form cannot be made to fit into accepted ideas it resists classification. Either it is not recognised as form, or else it is regarded, because of its deviations, as a new form […] *Jeux*, unamenable to traditional form despite its slight similarity to a rondo, constantly juxtaposes new themes, motives, and arabesques. Incidentally, mere addition does not produce form—except perhaps a potpourri.[18]

Eimert is unwilling to argue for a wholly traditional formal scheme, but is also wary that *Jeux* will be perceived as disorganized. He notices a number of motivic juxtapositions but is unwilling to allow contrast and "mere addition" to create form. In an attempt to provide some internal logic for *Jeux*'s apparent discontinuities, Eimert suggests that *Jeux* perhaps bears some vague similarity to rondo form. In one example, Eimert maps out sections of *Jeux* articulated by motivic repetition (Example 2.1). The italicized and

[16] Eimert, "Debussy's *Jeux*," 3.
[17] Ligeti, *Ligeti in Conversation*, 42.
[18] Eimert, "Debussy's *Jeux*," 5-6.

underlined ***A*** is an obvious restatement of the opening theme; the remaining As, according to Eimert, are "motivic hints."[19]

A-B-C-***A***-D-E-A-E-F-D-G-H-D-G-H-I-H-I-F-H-K-H-F-K-

L-M-L-N-O-N-***A***-P-Q-P-Q-R-S-T-U-A-U-A-V-W-X-A-X-A-X

Example 2.1: *Jeux's* quasi-rondo form as diagrammed by Eimert

The tentative rondo form hypothesis advanced in Example 2.1 is quickly revealed as a straw man, which Eimert quickly discards. The principal melody does not carry enough thematic weight and does not recur often enough to elevate its status to rondo theme. As he says, "…in listening to the work one realizes that there are so many 'subsidiary points' that one no longer notices the main point, i.e., the rondo theme."[20] For Eimert, *Jeux* is an important piece precisely because it is "unamenable to traditional form."[21] For Ligeti this is also true; he identifies Debussy as the impetus for the evolution in his own formal thinking:

> For me Debussy meant liberation from traditional form, not Schoenberg, Berg, or Webern, who in this respect are much more traditional … [formal] cohesion comes from the unity of an all pervasive mood, or perhaps it is due to its thematic material being derived from the same basic pattern, as is the case in the late works of Debussy. It is a new kind of form, a surging flow, yet it is not shapeless. That is what I adopted as my model.[22]

[19] Eimert, "Debussy's *Jeux*," 6-7.
[20] Eimert, "Debussy's *Jeux*," 7.
[21] Eimert, "Debussy's *Jeux*," 6.
[22] Ligeti, *Ligeti in Conversation*, 42.

The "surging flow" that Ligeti admired in Debussy bears a strong resemblance to the series of constantly changing events in *Apparitions* and *Atmosphères*, as the sectional analyses in Examples 2.2 and 2.3 show.

Formal Sections	*Apparitions*, I (1958-59)	Measure numbers/ Rehearsal letters
A	Low string cluster with timbral variations	mm. 1-11
B	Pointillistic interplay between piano, celesta, and strings	mm. 13-30
C	Silence	mm. 31-32
D	String tremolos	mm. 33-47/ A
C'	Silence	m. 48
E	Strings with vibrato, loud dynamic	mm. 49-54
F	String glissandos punctuated by percussion and piano outbursts	mm. 55-64/ B
G	Brass outburst	mm. 65-67
A'	Low string cluster with timbral variation, reminiscent of mm. 1-11	mm. 68-72
H	Very high strings and "wild" low string interjections	mm. 73-79/ C
I	Very high strings and celesta, piano, and harp interjections, dying away to silence	mm. 80-99 (end)

Example 2.2: Formal sections in *Apparitions*, first movement

Formal Sections	*Atmosphères* (1961)	Measure numbers/ Rehearsal letters
A	Mixed cluster gradually decreasing until only low string cluster remains	mm. 1-13 / A
B	Mixed cluster with instrument families emerging through crescendo-decrescendo patterns	mm. 14-22 / B
C	String and wind tremolos	mm. 23-28 / C
A'	String harmonics cluster	mm. 29 / D
D	Winds spiraling upward	mm. 30-39 / E, F
E	Drop to low basses	mm. 40-43 / G
F	String micropolyphony	mm. 44-53/ H, I
G	Brass intrusions against wind polyphony	mm. 54-65/ J, K, L, M
A''	Mixed cluster decreasing until string harmonics cluster remains	mm. 66-75/ N, O
H	Wind players' breath effects and string effects	mm. 76-84/ P, Q
I	High winds with ephemeral string harmonics	mm. 83-100/ R, S, T
J	Piano brushing dying away to silence	mm. 98-110 (end)

Example 2.3: Formal sections in *Atmosphères*

As the above examples demonstrate, the pieces do seem to be built upon a "surging flow" of constantly changing events—the feature that Ligeti emphasizes in his oft-cited discussion of the form of the pieces: "[…] An unceasing process of change results with the states and events which have already occurred mutually eliminating the possibility of their re-appearance, and thus being in effect irretrievable."[23] However, these sectional analyses also reveal a rondo-like feature—the varied return of the opening cluster—that is the same feature that had led Eimert to tentatively propose *Jeux* was a rondo form. Noting the return to the opening cluster directly contradicts Ligeti's reading of form of the pieces, as well as suggesting that despite Ligeti's denials, the concept of return also plays a role.

In his analysis of *Atmosphères*, Markus Suplicki has also described a persistent return to the abstract condition of stasis.[24] In Suplicki's analysis, the static wind and string clusters, along with the silence that ends the piece, provide moments of rest in contrast to the moving sections, which feature tremolos, dramatic changes in range, or micropolyphony. Suplicki suggests, "In a general sense, these [static] fields have at all times a variable function and also an exact, distinguishable place in the formal design."[25] Though the static moments are not always the same—various ranges and timbres locally

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[23] Ligeti, "Zustände, Ereignisse, Wandlungen," *Gesammelte Schriften* II, 173; quoted and translated in Marina Lobanova, *György Ligeti: Style, Ideas, Poetics* (Berlin: Verlag Ernst Kuhn, 2002), 73. This article is also translated by Jonathan Bernard as "States, Events, Transformations," *Perspectives of New Music* 31/1 (1993): 164-171.

[24] Markus Suplicki, "György Ligeti: *Atmosphères*: eine unkausale Form?" *Muskitheorie* 10/3 (1995): 235-47. Sigrun Schneider also give an analysis of the contrast between stasis and change in "Statik und Dynamik: Zur formalen Analyse von Ligeti's *Atmosphères*," *Musik und Bildung* 10 (1975): 506-10.

[25] Suplicki, "György Ligeti: *Atmosphères*," 237. "Im Gesamtzusammenhang haben die Felder auch jeweils unterschiedliche Funktionen an genau abgegrenzter Stelle im Formverlauf."

define the clusters—their ability to anchor the piece on the most global level remains constant throughout the work. More specifically, the varied returns of the opening clusters function a bit like the returning rondo theme of *Jeux*—they provide subtle anchors in the midst of a form that emphasizes difference and change.

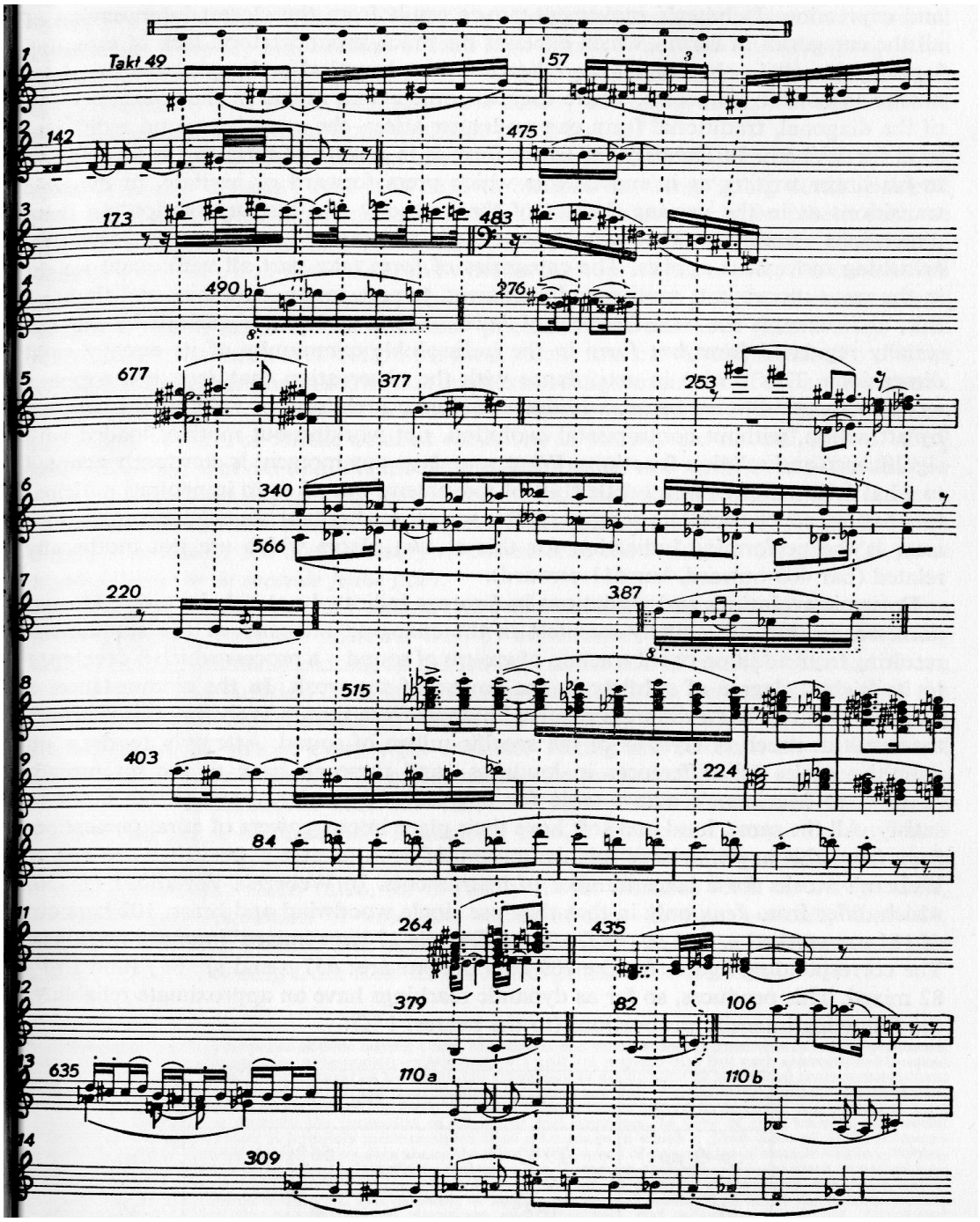
Clearly *Jeux*, *Apparitions* and *Atmosphères* would be poorly described by traditional formal categories. But given that the pieces also contain subtle returns to a stable resting point—the principal theme and the static cluster, respectively—we can infer that issues of coherence and unity remained very much a part of the compositional frame of reference for both Debussy and Ligeti. Even as Ligeti wished to step outside of the bounds established by conventional forms, the coherence that these forms provided was still an important issue to him and others in the Darmstadt circle. Eimert's analysis of *Jeux* is evidence of this point: he focuses above all on the interconnectedness of the thematic material, so that *Jeux* ultimately exhibits coherence even though it is unpredictable, shifting, and "modern."[26] If Eimert posits the relationship to rondo form without really believing it, he is altogether more serious about proving that thematic unity is the primary form-bearing element *Jeux*. Echoing Eimert's analysis, Ligeti also praises *Jeux*'s coherence: "And yet it [*Jeux*] has a unity, as its thematic material goes back to the same basic idea."[27] In the next section, I show how Ligeti adapted and applied ideas about thematic unity in *Apparitions*.

[26] Eimert, "Debussy's *Jeux*," 20.
[27] Ligeti, *Ligeti in Conversation*, 42.

Vegetation and Organicism

Eimert's second attempt at describing the form of *Jeux* centers around a table (reproduced in Example 2.4) that shows that, at least in terms of contour, most of the other motives in the work can be understood as variations on the rondo theme. Eimert says it is "[…] a table of associations, or, to keep to the metaphor of organic growth, a table of vegetation which gives information about flowers and particles in the lines of *Jeux*."[28] Eimert fixates on the vegetation metaphor, weaving peculiar verbiage about plants, blooms and vegetation throughout the article. Ligeti echoes this unconventional prose with a startling degree of similarity: "Its [*Jeux*'s] form is like *vegetation*, like a tropical tree whose wildly growing aerial roots grow downwards back into the soil" [Emphasis mine].[29] Ligeti's repetition, knowingly or not, of Eimert's metaphor at least twenty years later suggests that Eimert's analysis made quite a strong impression on him; he may have even integrated portions Eimert's analysis of *Jeux* into his own thoughts.

[28] Eimert, "Debussy's *Jeux*," 14. Table on p. 15.
[29] Ligeti, *Ligeti in Conversation*, 42.



Example 2.4: Motivic table for *Jeux* as constructed by Eimert

Eimert's unconventional, persistent vegetation metaphor raises an obvious parallel to organicism. He comes close to suggesting that the seed or principal theme contains motivic material for the whole of the work, an idea that recalls nineteenth-century generative concepts. Organicism, in the nineteenth century sense of the term, suggests that the various parts exist in a reciprocal relationship to the whole of the artwork, such that the whole would be marred or destroyed by the removal of any part.[30] Subsidiary ideas serve the purpose of the whole, but the overarching unity does not undermine the character of the various parts. Organicist ideology often translates into a generative model for musical form, in which "a single theme could serve as the sole source of an entire work, engendering all of its material, primary and subsidiary."[31] David Montgomery calls this the cellular model, where a prototype cell could grow and develop into higher forms and "each level provides passage to a successive level."[32] Another expression of this idea is Schoenberg's concept of developing variation: "… in the succession of motive-forms produced through variation of the basic motive, there is something which can be compared to development, to growth."[33]

At first glance, Eimert traces the motivic development in Debussy's *Jeux* in a way that could almost fit within this paradigm. Yet he continually strives to demonstrate how

[30] For more on the historical evolution of the concept of organicism, see Ian Bent, "General Introduction," *Music Analysis in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994), 1-17; David L. Montgomery, "The Myth of Organicism: From Bad Science to Great Art," *Musical Quarterly* 76/1 (Spring 1992): 17-66; Ruth A. Solie, "The Living Work: Organicism and Musical Analysis," *19th Century Music* 4/2 (Autumn 1980): 147-56.
[31] Bent, "General Introduction," 14.
[32] Montgomery, "The Myth of Organicism," 18.
[33] Arnold Schoenberg, *Fundamentals of Musical Composition* (New York: St. Martins, 1967), 8.

the vegetation metaphor differs from nineteenth century organicism with his insistence on its "secret associative power."[34] Eimert's point is not to do away with organicism entirely, but to distinguish Debussy's brand of organicism from the nineteenth century paradigm. It is a subtle distinction that I will try to clarify in a moment.

It is clear that Ligeti, like Eimert, draws somewhat from traditional concepts of organicism in an unpublished radio broadcast about *Apparitions*. In the manuscript, held at the Paul Sacher Foundation, Ligeti suggests that the two movements of *Apparitions* are connected in terms of motivic variation. Notice the emphasis on germination, growth and development:

> The second movement is a free variation of the first, in which a few musical thoughts that appeared in the first movement only as seeds are more widely spun out in the second and the reverse: figures which in the first movement appeared completely developed are simply hints in the second. The following serves as an example, via tremolos and trills of the string instruments in a characteristic section of the first movement (mm. 33-39). These simple germinal ideas are changed and developed in the second movement (mm. 1-24), at the same time differentiated and broadly structured, so that hence an apparently completely new entity emerges.[35]

As Example 2.5 shows, it is possible to produce a motivic table based on the above quotation much like the one Eimert produced for *Jeux*. Essentially three different motives are introduced in mm. 33-39 of the first movement as seeds that will be further

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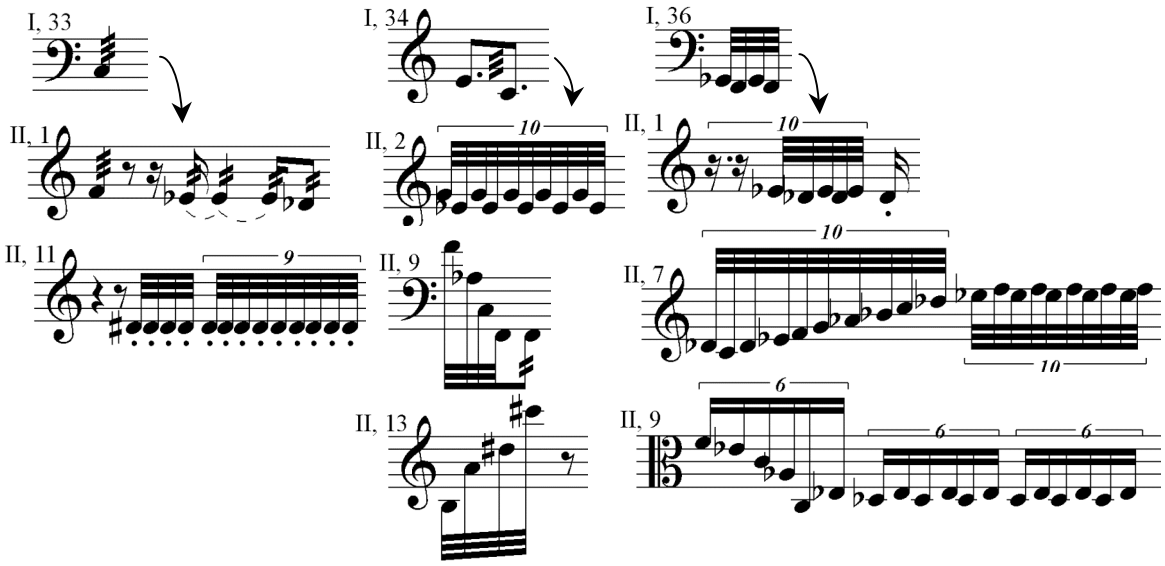
[34] Eimert, "Debussy's Jeux," 4.

[35] Ligeti, "Über mein Orchesterstück *Apparitions*," unpublished manuscript for radio broadcast held in the György Ligeti Collection, Paul Sacher Foundation. "Der zweite Satz ist eine freie Variation des ersten, wobei einige musikalische Gedanken, die im ersten Satz nur im Keim vorhanden sind, im zweiten weiter ausgesponnen werden und umgekehrt: Gestalten, die im ersten Satz voll ausgeprägt auftreten, werden im zweiten zu bloßen Andeutungen. Als Beispiel diene der folgende, durch Tremoli und Triller der Streichinstrumente charakterisierte Abschnitt aus dem ersten Satz: BEISPIEL 1: Satz I Takt 33-39, ca. 21". Dieser bloß keimhafte Gedanke wird dann im zweiten Satz verändert und durchgeführt, zugleich differenziert und weitgehend gegliedert, so dass daraus ein scheinbar völlig neues Gebilde entsteht: BEISPIEL 2: Satz II Takt 1-24 (schon ab Takt 23 ausblenden), ca. 1' 11"."

developed—the tremolo on a single pitch, the tremolo in thirds, and the tremolo in seconds. The chart shows how each of these ideas is expanded and developed in mm. 1-24 of the second movement.[36]



Example 2.5: Motivic table for tremolos in *Apparitions*

Ligeti and Eimert's insistence on the vegetation metaphor and their discussions of germinal motives and development make it difficult to comprehend the extent of their professed distance from organicism. Were they simply substituting a new set of vocabulary for organicism? If not, how is vegetative development different from organic development? It is possible that Ligeti and Eimert actually meant something closer to the

[36] For simplicity, I generalized to show the first occurrence of each motive; the pitch shown is from the first player of the group (first cellist, for instance), though given Ligeti's individual scoring, many different pitches are represented by different players during each figure.

concept of the "rhizome" developed by Gilles Deleuze and Félix Guattari in the 1970s.[37] Of course Eimert's analysis predates *A Thousand Plateaus*, but it is worthwhile to note that Deleuze and Guattari discuss Boulez's music of the same period as rhizomatic. Indeed, their musical references throughout that book are to the 1950s European avant-garde, which suggests that perhaps the rhizome is in some ways a deeper working-out of the ideas of Eimert, Stockhausen, Boulez, Ligeti and others of the Cologne-Darmstadt circle. Here, I use Deleuze and Guattari's concept of the rhizome as a tool for imagining how the motives in *Jeux* and *Apparitions* could create forms that are not necessarily derived from the generative foundations of organicism.

Deleuze and Guattari argue that the root system—traditionally understood as stems that proliferate into branches—yields binary logic and trees of genealogy that have defined the process of Western thought.[38] This so-called "arborescent" system has much in common with the generative model for organicism: it embodies the idea that, through variation and diversity, the energy of the root is expressed in the development and growth of the branches and leaves. The parts owe their existence to the generative process of growth and likewise contribute their own energy to the vitality of the whole tree. Thus there is a linear, causal relationship between root and branches, branches and leaves—a tree could not produce leaves without first growing a root and branches. A rhizome, on the other hand, is a subterranean plant that grows simultaneously in a multiplicity of

[37] Gilles Deleuze and Félix Guattari, *A Thousand Plateaus*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987).
[38] Deleuze and Guattari, *A Thousand Plateaus*, 5.

directions, proliferating in diverse and unpredictable ways. Deleuze and Guattari list some of the defining characteristics of the rhizome:

> Any point of a rhizome can be connected to anything other, and must be. This is very different from the tree or root, which plots a point, fixes an order…There is no unity to serve as pivot in the object or to divide in the subject…A rhizome is not amenable to any structural or generative model. It is a stranger to any idea of genetic axis or deep structure.[39]

In contrast to the linearity of the arborescent model, Deleuze and Guattari advance the concept of the rhizome as a metaphor for non-traditional modes of thinking that include non-binary and circular thought.[40] As they say, "The tree imposes the verb 'to be,' but the fabric of the rhizome is the conjunction 'and…and…and…' This conjunction carries enough force to shake and uproot the verb 'to be'."[41]

Eimert's description of *Jeux*'s motives resonates with Deleuze and Guattari's description of rhizomes. For instance, Eimert emphasizes that the motives of *Jeux*, produce "[…] a circulation which is always at its goal and therefore never 'going' anywhere, never building up thematic figures, with no motivic 'working out'."[42] He argues that Debussy ignores the traditional course of motivic development, instead producing "inexhaustible variants" in a "freely growing process of breeding."[43] The rhizomatic ideas of circularity and breeding easily apply to Eimert's "table of vegetation" shown in Example 2.4. Eimert's table is not a progression of motives inextricably linked to the former and the following. Instead, the idea of the rhizome suggests that at least in

[39] Deleuze and Guattari, *A Thousand Plateaus*, 7-12.
[40] Deleuze and Guattari, *A Thousand Plateaus*, 20-23.
[41] Deleuze and Guattari, *A Thousand Plateaus*, 25.
[42] Eimert, "Debussy's *Jeux*," 10.
[43] Eimert, "Debussy's *Jeux*," 10.

theory, any motive can be connected to any other motive. The rondo theme (m. 49) is at the head of the chart only because it appears first in the temporal sequence. Deleuze and Guattari might say that the music could have begun from any of the motives listed, and may proceed to any other motive. After all, their first principle for a rhizome is that, "Any point of a rhizome can be connected to anything other, and must be."[44]

Though Eimert does not go quite that far, he does emphasize the non-goal-directed quality of Debussy's motives. Eimert explains that all the themes of *Jeux* feel like antecedents, or beginnings with no consequent endings.[45] Thus Debussy abolishes the cause-effect binary relationship between the beginning of a phrase and its logical ending in *Jeux*. Ligeti's comment that *Jeux*'s "wildly growing aerial roots grow downwards back into the soil"[46] also embraces rhizomatic non-linearity. While roots typically do grow downwards, aerial roots growing downward from the air are paradoxical. If we read Ligeti's "aerial roots" to mean tree branches, the branches ought to grow upwards, not downwards. Ligeti's downward-growing aerial roots are in fact circular—what is visible above ground grows downward, presumably joining with the subterranean structure. Ligeti's imaginative repetition of Eimert's motivic "circulation" metaphor suggests that he, too, envisioned *Jeux* breaking free from the binary logic of the root-tree system and replacing it with circular logic.

[44] Deleuze and Guattari, *A Thousand Plateaus*, 7.
[45] Deleuze and Guattari, *A Thousand Plateaus*, 10.
[46] Ligeti, *Ligeti in Conversation*, 42.

Boulez likewise seems to suggest that the form of *Jeux* embodies some rhizomatic features. In his analysis, *Jeux* is made up of fleeting moments rather than an overarching architecture that determines the course of events:

> Now, far from being feebly fragmented, the structure is rich in invention and shimmeringly complex, and introduces a highly ductile way of thinking based on the notion of irreversible time; in order to *hear* it, one's sole recourse is to submit to its development, since the constant evolution of thematic ideas rules out any question of architectural symmetry […] *Jeux* marks the arrival of a musical form which, since it involves *instantaneous* self renewal, implies a way of listening that is no less *instantaneous*.[47]

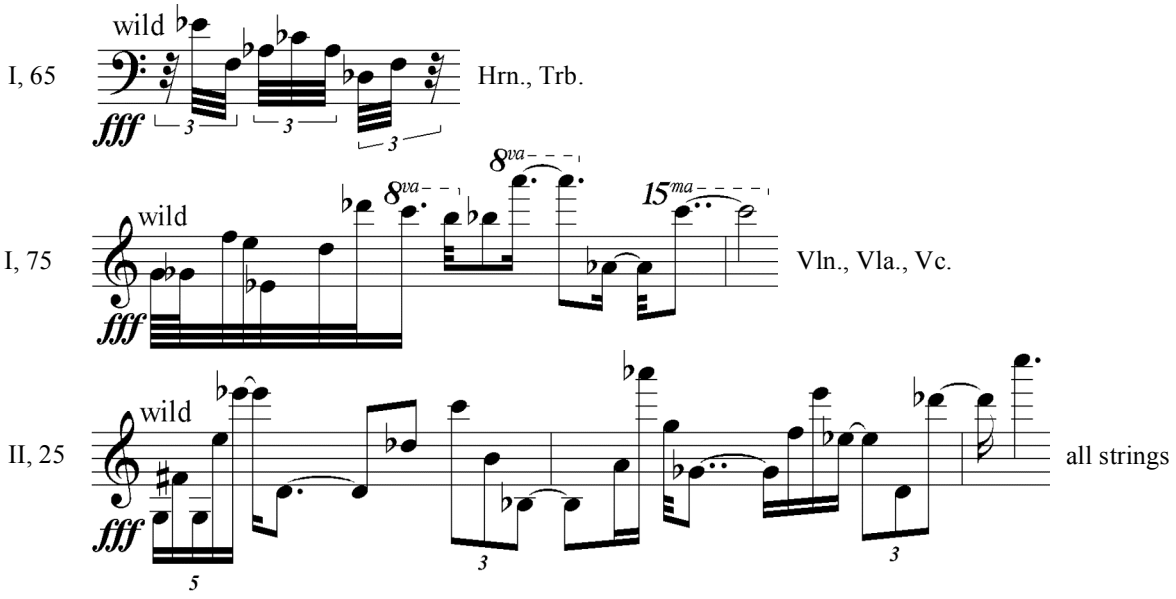
Eimert, Ligeti and Boulez all develop interrelated ideas that suggest some aspect of the rhizomatic quality of *Jeux*. The motives proliferate without causal connections (Eimert), and perhaps even appear circular (Ligeti), since the piece lacks the architectural underpinnings that would govern its unfolding (Boulez).

The tremolo motives from *Apparitions* suggest that Ligeti put these analyses of *Jeux*'s circular, vegetative proliferations to use in his musical works as well. As was the case in *Jeux*, the motives in Example 2.5 evince an absence of goal-directed motion. In fact, the order shown on the chart (for example, where the third intervals grow progressively larger) is somewhat arbitrary—in another interpretation, the tremolos in thirds could have more in common with the tremolos in seconds. The temporal order of the music essentially prioritizes one of the configurations, as was the case in *Jeux* as well. But the motives shown in Example 2.5 are particularly amenable to the idea of haphazard, rhizomatic connections because of their fragmentary nature. The tremolos are

[47] Boulez, "Debussy," *Stocktakings*, 274; emphasis Boulez's.

mere effects, devoid of the identifiable melodic and rhythmic traits usually associated with the theme. Thus the fragmentary tremolos, if we are willing to think of them as rhizomes, deny by their very nature both the content of the theme and its potential for linear, logical development over the course of the work.

Another example of a rhizomatic motive is the "wild, ferocious" micropolyphony of the second movement of *Apparitions*. As Example 2.6 shows, it is foreshadowed twice in the first movement (horns and trombones, mm. 65-67 and strings, mm. 75-76) before it takes over the second movement (strings, mm. 25-37). These motives, like rhizomes, seem to breed, appearing unexpectedly and then disappearing below the surface, as it were, also without warning.



Example 2.6: Motivic table for "wild" micropolyphony in *Apparitions*

The final appearance of the "wild" motive in the second movement seems in some way a culmination of the previous hints—it is the longest, most developed statement of the motive and violently interrupts the proliferation of the tremolos to assert itself in the texture. It is tempting to view this last intrusion as evidence of (fragmented) linear motivic development. A more compelling interpretation, however, draws attention to the circularity of this last micropolyphonic reappearance. Upon closer examination, each statement of the motive is quite similar, considering the dynamics, leaping melodic contours and irregular rhythms. Beyond the thinly veiled circular reappearances of the motive, the longest statement in the second movement is in fact merely a repetition of a descending chromatic scale (with octave displacement). Thus the motive itself is finally revealed to be circular, doubling back on itself and suggesting that, as was the case in *Jeux*, the motive has nowhere to go. This circularity is magnified by its treatment in canon in the final statement, as well as its impetuous appearances throughout the form.

This sort of doubling back on the same material is characteristic of the form of *Apparitions* on the whole. The recycling of both the tremolo and the "wild" motives shows that the two movements are deeply interrelated. As Ligeti himself has said, the two movements of *Apparitions* are crafted from an "endless variations" model.[48] Reappearing motivic material binds the two movements, but as was the case in *Jeux*, the rhizomatic motives demonstrate the music's circularity and call attention to the absence of goal-directed motion. Any overarching architecture that would explain why the

[48] This is represented particularly lucidly in the unpublished manuscript "Über mein Orchsterstück *Apparitions*" (György Ligeti Collection, Paul Sacher Foundation).

tremolos and "wild" motives reappear when they do is missing from *Apparitions*, though this is entirely characteristic of rhizomes; as Deleuze and Guattari remind us, "a rhizome is not amenable to any structural or generative model. It is a stranger to any idea of genetic axis or deep structure."[49] The rhizomatic form of *Apparitions*, while clearly avoiding the teleology of traditional forms, is, as Ligeti says, "also not shapeless."[50] In the next section, I show how Ligeti's interaction with Stockhausen's statistical form provides a new template in his quest to shape his music without relying on traditional notions of form and motivic development.

Stockhausen's Statistical Form

It is no coincidence that Ligeti developed his signature sound-mass style just after his emigration to the West, since Ligeti encountered many crucial influences in quick succession. Shortly after his emigration in December of 1956, Ligeti met and lived with Stockhausen, who was already one of the most influential and prolific members of the Cologne-Darmstadt avant-garde. Ligeti began an apprenticeship at the electronic music studio at the *Westdeutscher Rundfunk* (*WDR*) studio in Cologne in early 1957, where Stockhausen had already been working with Eimert and Koenig to produce pieces such as *Gesang der Jünglinge*. As Ligeti says, "The most important members of the group were Stockhausen and Gottfried Michael Koenig. Stockhausen was extremely kind to me, I

[49] Deleuze and Guattari, *A Thousand Plateaus*, 9.
[50] Ligeti, *Ligeti in Conversation*, 42.

stayed at his house for six weeks."[51] Ligeti entered Stockhausen's life when at the moment when the latter was intensively developing ideas of statistical and group forms for use in *Gruppen*.[52] Stockhausen reports, "I told Ligeti about these new discoveries, the statistical processes that I had been exploring for three years. And he caught on. He particularly liked the statistical aspect of music […] Ligeti continued working in this fashion, avoiding all the *Gestalten*, the clearly defined figures."[53]

Stockhausen's first attempt to describe and define statistical form publicly came in his 1954 essay "Von Webern zu Debussy: Bermerkungen zur statistischen Form," [From Webern to Debussy: Remarks on Statistical Form], which was broadcast as a night program on the *WDR*.[54] In the essay, Stockhausen describes Debussy's *Jeux* as a multitude of "groups," or musical events that share at least one musical parameter in common. Register, dynamics, articulation, timbre, pitch and duration are all possible group-defining parameters. Groups are stronger when they share more parameters in common; for instance, timbrally unified strings all playing loudly in a high register form a strong group while a mixed group of instruments playing in varied ranges and dynamic levels, whose only commonality is their staccato articulation, form a weak group.[55] Group form, as Stockhausen defines it, is an extension of pointillism, itself a consequence

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[51] Ligeti, *Ligeti in Conversation*, 34.
[52] Karlheinz Stockhausen, *Stockhausen on Music*, ed. Robin Maconie (London: Marion Boyars, 1989), 71; Ligeti, *Ligeti in Conversation*, 34; Lobanova, *György Ligeti*, 29-31; Steinitz, *György Ligeti*, 75-82.
[53] Stockhausen, *Stockhausen on Music*, 71. Stockhausen goes on to suggest that Ligeti may have even become overly fascinated with statistical forms, in as much as the micropolyphony of Ligeti's sound-mass works focuses compositional energy on the weaving of the musical lines to the detriment of the shape of the whole sound mass (*Gestalt*).
[54] Stockhausen, "Von Webern zu Debussy: Bermerkungen zur statistischen Form," *Texte* I, 75-85.
[55] See Stockhausen, "Points and Groups," *Stockhausen on Music*, 33-42.

of integral serialism. When Messiaen applied the ordering of the row to all parameters, each event or "point" (*Punkte)* became an independent entity with no implied connection to its surrounding events.[56] In group form, all of the musical qualities of the points—dynamics, duration, pitch, articulation, timbre—are heard together as a blend rather than as the isolated entities of pointillism. Thus if enough points are combined, or are combined quickly enough, a group or mass defined by its tone color and relative dimensions of register, pitch range, and duration results. The overall tendency of the group, its overall shape, is the most important feature, not its constituent parts.

Having established a continuum between points and groups, Stockhausen turns his attention to statistical form. Stockhausen defines statistical form as "…a random distribution of elements within given limits. Only statistics can measure it…[it's] like changing the position of a tree's leaves. You can say: 'This is a beech tree,' even if all the leaves have changed their position."[57] From the quotation above, we can see that statistical form depends on two basic ideas. First is the idea that music can be composed of shapes, or "groups" as Stockhausen says, which are defined by their boundaries. Stockhausen uses the metaphor of a tree to suggest that objects are perceptible and recognizable as shapes alone. The second idea that Stockhausen conveys is that within the boundaries of the shape, the order of the individual events is unimportant. Hence, the leaves of the tree an be rearranged as long as the overall shape of the tree is maintained. In the following analysis, I argue that Ligeti applied both ideas in his music; his sketches

[56] Stockhausen, "Von Webern zu Debussy," *Texte* I, 76.
[57] Stockhausen, *Conversations with the Composer*, ed. Jonathan Cott (New York: Simon and Schuster, 1973), 73-76.

for *Apparitions* and *Atmosphères* show an emphasis on shape for its own sake, and later examples show that Ligeti also randomized the order of individual events within articulated boundaries.[58]

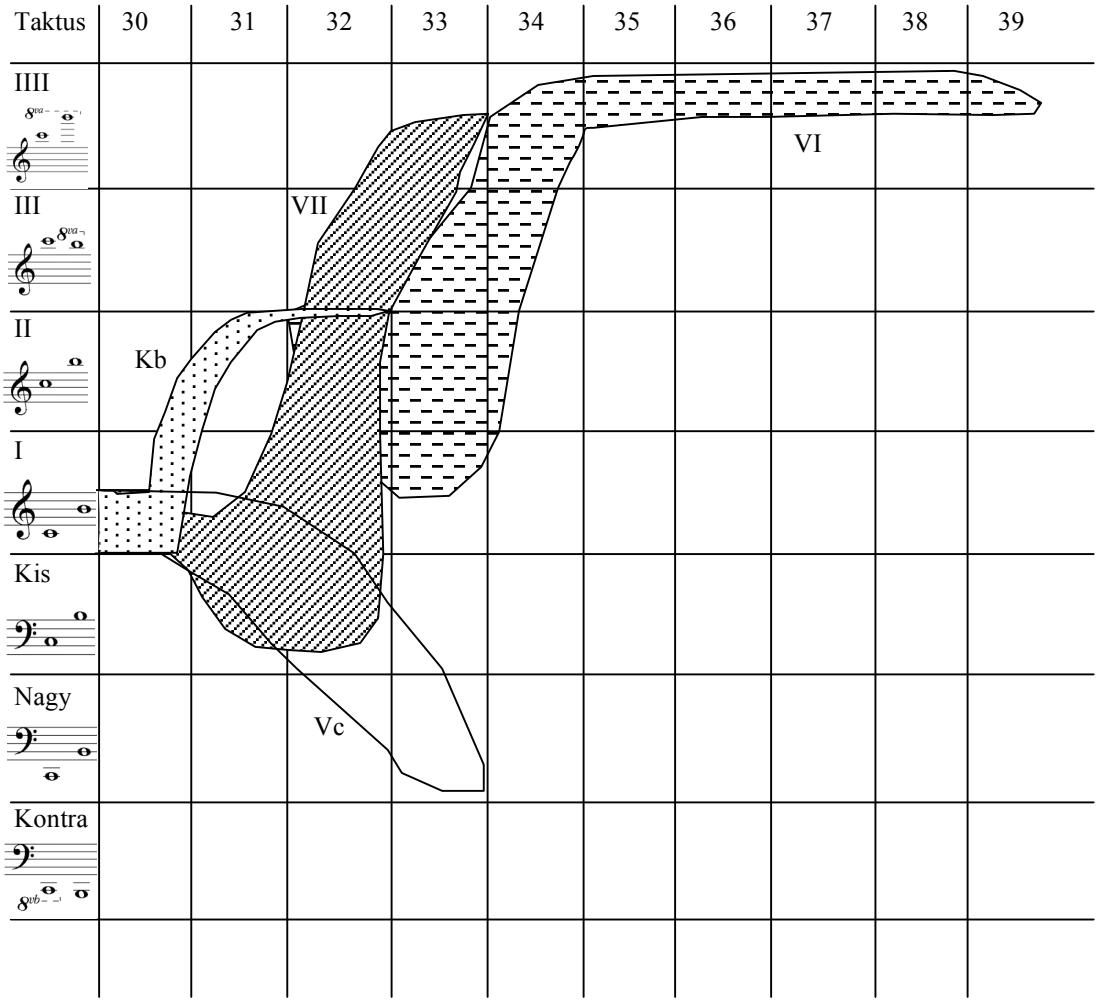
The sound masses so prevalent in Ligeti's works largely conform to the precepts of Stockhausen's statistical form, since they are necessarily defined by their outer limits.[59] An early stage sketch for *Atmosphères*, pictured in Example 2.7, shows that Ligeti initially thought of the work in terms of shape.[60] The sketch shows octave registers in the left margin and measure numbers across the top of the chart. The free-form shapes represent the register and general direction that Ligeti imagined for each group of strings. The instruments all begin in the same register (apparently between C4 and about A4), though the cello dives two octaves lower while the second violins climb three octaves higher. The passage ends with a narrowing band of very high first violins. Though it gives a sense of the direction of the passage, the sketch is fairly imprecise in

[58] Ligeti maintained that he had the shapes and sounds of the sound masses in mind before his encounter with Stockhausen, but was only able to realize them when he discovered that micropolyphony could offer a logic for constructing the masses as well as control over their directions and qualities (*Ligeti in Conversation*, 100-101). I argue *contra* Ligeti that Stockhausen's statistical form at least offered an additional perspective on conceptualizing sound masses, and moreover, likely provided tools for realizing them. On this point, see also Charles Wilson, "György Ligeti and the Rhetoric of Autonomy," *Twentieth Century Music* 1/1 (2004): 11.

[59] The graphic analyses produced by scholars such as Amy Bauer, Jonathan Bernard and Jane Piper Clendinning also testify to the fact that Ligeti's sound masses are amenable to graphic, spatial representations that show boundaries and shape. See Amy Bauer, *Compositional Process and Parody in the Music of György Ligeti* (Ph.D. Diss., Yale University, 1997), esp. 127, 147, 168, 172, 196; Jonathan Bernard, "Inaudible Structures, Audible Music: Ligeti's Problem, and His Solution," *Music Analysis* 6/3 (1987): 207-236; Bernard, "Voice-Leading as a Spatial Function in the Music of Ligeti," *Music Analysis* 13/2-3 (1994): 227-253; Jane Piper Clendinning, *Contrapuntal Techniques in the Music of György Ligeti* (Ph. D. Diss., Yale University, 1989); Clendinning, "Structural Factors in the Microcanonic Compositions of György Ligeti," *Concert Music, Rock and Jazz Since 1945*, ed. Marvin and Hermann (Rochester: University of Rochester Press, 1995), 229-258.

[60] This is my transcription of a sketch held in the Ligeti Collection at the Paul Sacher Foundation. A facsimile of the sketch appears in Richard Steinitz, *György Ligeti*, 109.

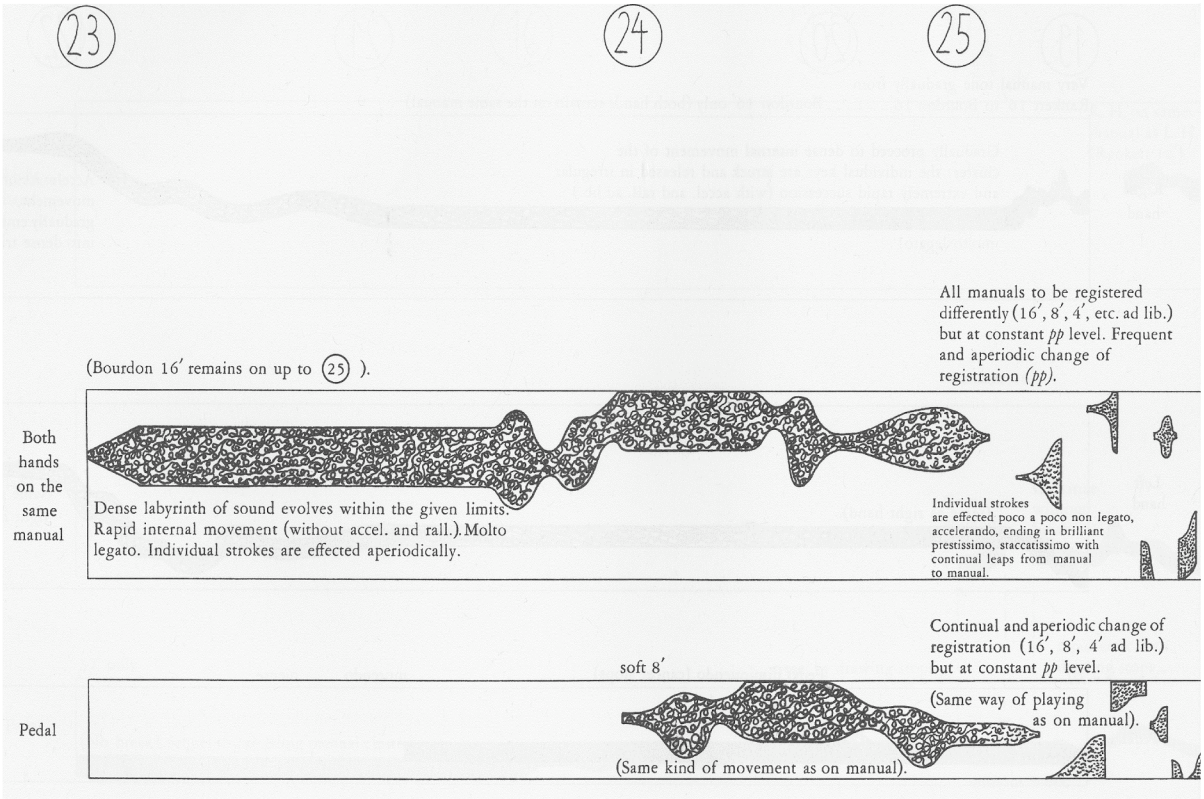
terms of musical detail.[61] Ligeti relies on the contours of the shapes to represent his overall conception of the passage—more specific musical details would be added later, in traditional notation.



Example 2.7: *Atmosphères* planning sketch showing register, instrumentation and shape
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

[61] The sketch corresponds to mm. 30-39 in the *Atmosphères* score. Later sketches for this passage of *Atmosphères* show pitches inside the shapes, as well as voice-leading. In Chapter 3 I argue that these details relate directly to Ligeti's experience in the electronic music studio, particularly his work on *Pièce électronique Nr. 3* (1957).

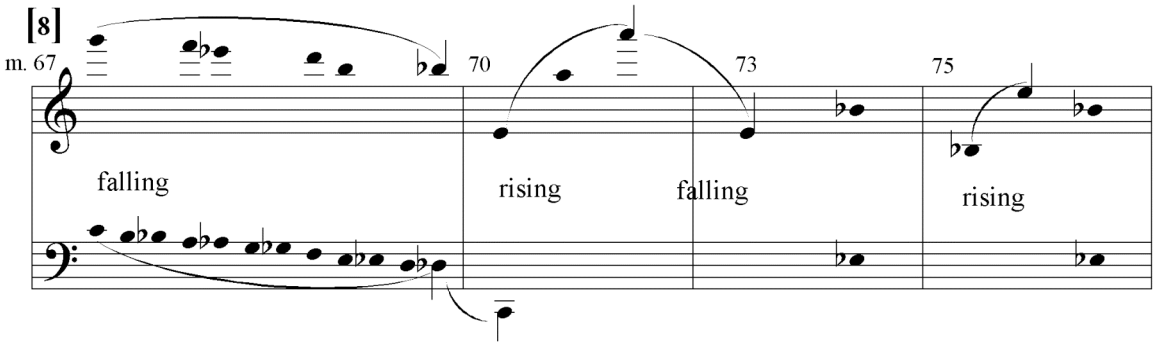
Ligeti's only piece in graphic notation, *Volumina* (1961) for organ, is even more committed to using statistical shapes to convey musical information (see Example 2.8). Here, traditional notation is completely absent; the player must render the graphic notation musically by correlating the visual changes in shape with the approximate pitch range and prose directions given in the score.



Example 2.8: *Volumina* (1961), score page 14

A precedent for this approach to musical shape is found in Stockhausen's analysis of *Jeux*, which leaves aside the detailed motivic analysis of Eimert and instead reads *Jeux* in terms of large-scale tendencies within masses. Stockhausen argues that the piece is constructed from changes in texture and density, registral swings, and timbral shifts from dark to light. In a characteristic example from the *Jeux* analysis, Stockhausen points out the combination of rising and falling shapes in mm. 67-76. Stockhausen's focus here is on register, and he points out the way in which nearly symmetrical two-measure units alternate in registral direction (see Example 2.9).[62] Stockhausen emphasizes that the rising-falling shapes shown in Example 2.9 are articulated by the outer boundaries of the registral fluctuations. His analysis capitalizes upon the rising-falling shapes with regard to textural density, instrumentation, dynamics and tempo at many points in *Jeux* because for Stockhausen, these rising-falling shapes make up "model types of directional motion that return in many variations in the work."[63]

[62] Example 2.8 is my illustration drawn from Stockhausen's prose; his article does not include any figures or graphs.
[63] Stockhausen, "Von Webern zu Debussy," *Texte* I, 80. "Gruppenkombinationen dieser Grundformen ergeben Modelltypen der Bewegungsrichtung, die in vielfältiger Abwandlung in diesem Werk wiederkehren."

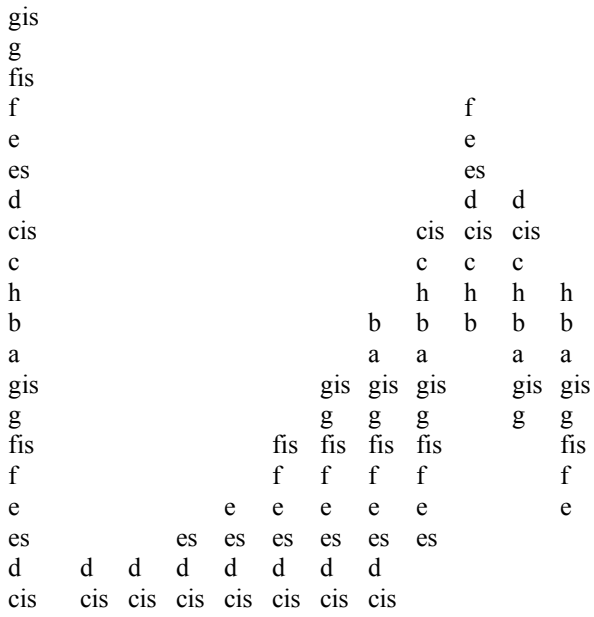


Example 2.9: *Jeux* mm. 67-76, reduction showing Stockhausen's falling/rising shapes

Though the *Atmosphères* sketch and *Volumina* score clearly show that Ligeti applied shape-based statistical concepts in the early 1960s, sketches for *Apparitions* suggest that he was working with those ideas much earlier, concurrent with encountering Stockhausen's *Jeux* analysis around 1957. For instance, Example 2.10 is a transcription of a sketch that shows a rising-falling motion graphed in pitch names. Though this sketch is more precise than the one shown in Example 2.7, it still lacks voice-leading, instrumentation and musical notation. It seems that graphic notation (Ligeti's original sketch is on graph paper) was sufficient to convey the direction and shape of the passage, at least until it could be translated into musical notation.[64] In program notes to *Apparitions*, Ligeti confirms what this sketch suggests: "The first movement is the

[64] Some of Ligeti's sketches of this type include voice-leading and instrumentation. I discuss these in Chapter 3.

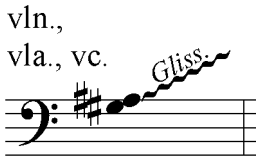
earliest example of a composition with *statistical*, harmonically neutral Klangfarben-surfaces"[65] [Emphasis mine].



Example 2.10: *Apparitions* sketch showing graphic representation of rising-falling shape
György Ligeti Collection, Paul Sacher Foundation. Used by permission

When it comes to musical notation, Ligeti often incorporated the kind of large-scale, shape-based motion we have seen in the sketches by using glissandos to move a cluster that is necessarily defined by its outer boundaries. Example 2.11 shows a whole-tone dyad treated with a glissando, a simple example of this kind of cluster-boundary thinking. The narrow band slides upward in pitch, though does so with no specific goal.

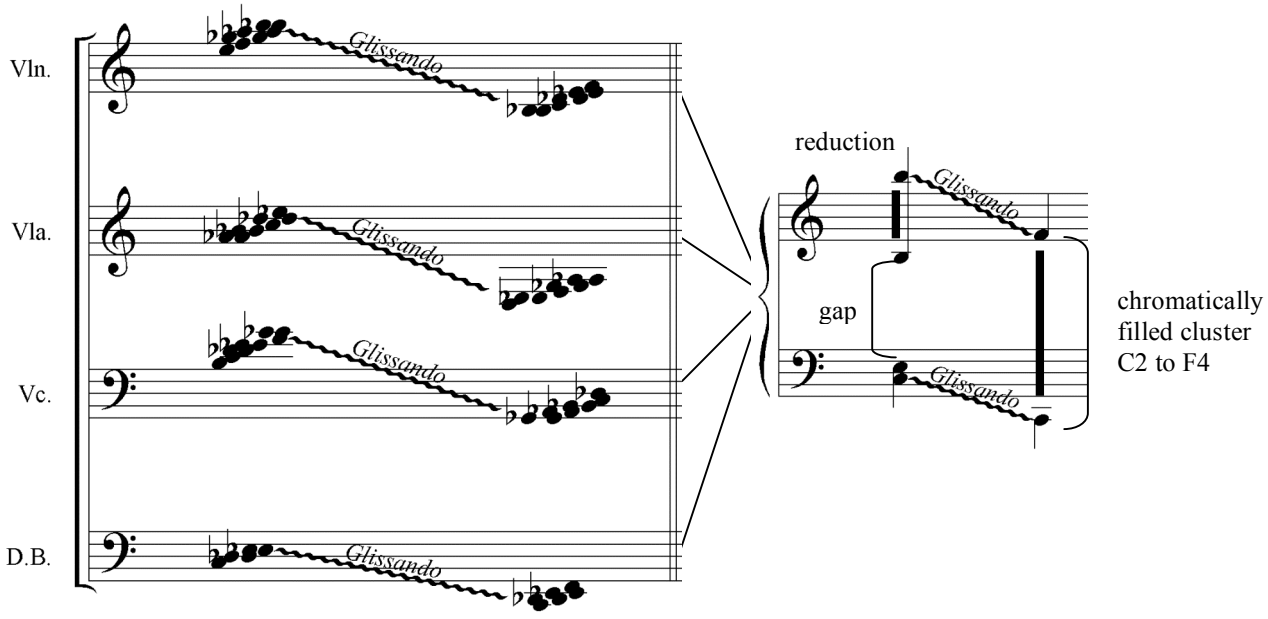
[65] Program notes for *Apparitions*, presumably for the Warsaw Autumn Festival of 1965; held in the György Ligeti Collection at the Paul Sacher Foundation.



Example 2.11: *Apparitions*, second movement, m. 54, narrow band of string glissando

In a more complicated example, Ligeti applies this idea in each of the string instruments (see Example 2.12). Here each group of strings chromatically fills the space of their first cluster—a perfect fifth in the violins and violas, while the cello and bass fill minor sixth and major third spaces, respectively. The outer boundary of all the strings together is just under three octaves (C3 to B5). During the glissandos, each cluster drops an octave plus a tritone except the basses, most of whom drop a major seventh. The outer boundaries of the whole shape are now narrower, closer to two and a half octaves (C2 to F4). This narrowing of the outer boundaries during the glissando is seemingly a deliberate tightening of the material; Ligeti eliminates the gap that had originally existed between the E3 of the basses and the B3 of the cellos. Thus Example 2.12 shows three simultaneous techniques: thinking in terms of boundary-defined shapes, moving those shapes in precise ways, and finally narrowing or tightening the range of the aggregate. The tightening of range in order to move to the second, chromatically filled cluster amounts to a change of shape. Thus in addition to the possibility that the cluster bands can remain static or be moved as objects, Ligeti begins to explore the idea that the

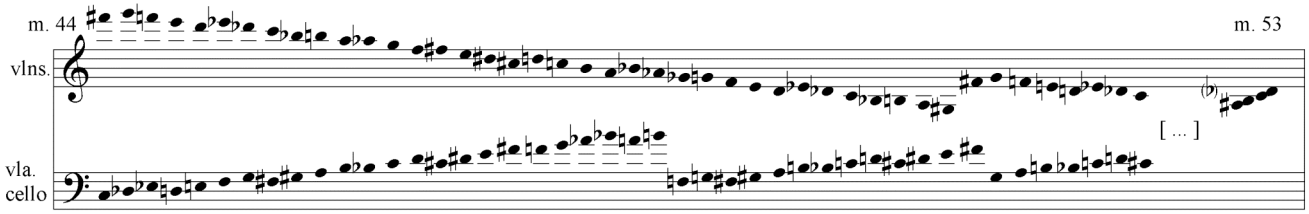
clusters can also change shape as they change their boundaries; he explores this territory particularly in his next sound-mass work *Atmosphères*.



Example 2.12: *Apparitions*, first movement, mm. 63-64, wide bands of string glissandos condensing to chromatically filled cluster

Example 2.13 shows the famously complex string micropolyphony of *Atmosphères* reduced to the two *Ur*-melodies that under-gird the section. Each melody is loosely based on a twelve-tone row (or chromatic scale, depending on one's perspective). Over the course of the passage, these two *Ur*-melodies meander chromatically downward and upward, converging on one another until finally coming to rest on a chromatic cluster

spanning a minor third. The intensity of the passage is a result of both the goal-directed progression of the voices and the increase in density toward the end of the passage. The micropolyphonic canon makes the passage perceptually dense by weaving the individual instrumental voices together on the surface, blurring metric and rhythmic distinctions. Structurally speaking, the passage becomes denser as the two *Ur*-melodies underlying the micropolyphony registrally impinge on each other. Weaving is an appropriate metaphor for the structural process at work—voices begin to overlap and pile on top of one another as the shape condenses. Importantly, the underlying global wedge shape transcends the micropolyphonic complexity of the score when the passage is heard as well as when it is represented in reduction. On a structural level, the wedge shape anchors the passage underneath the surface of micropolyphony, which is an idea that is deeply reflective of Stockhausen's statistical form.

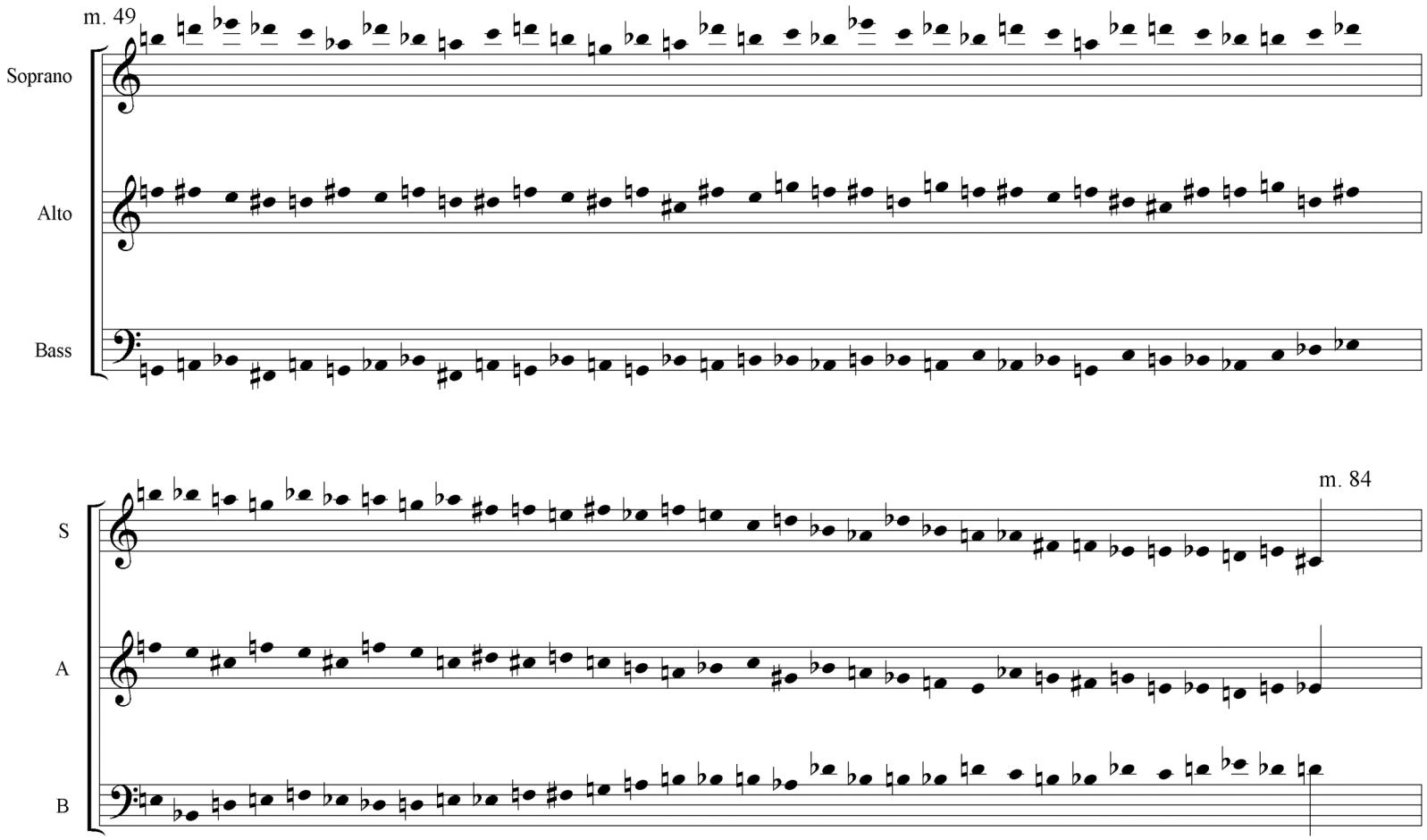


Example 2.13: *Atmosphères* mm. 44-53, convergence of string micropolyphony into cluster

In a similar case, a vocal passage of *Aventures* (1962-65) in reduction reveals a progressive narrowing into a cluster (see Example 2.14). In terms of registral boundaries, this passage is also a wedge that moves from the expansive limits of each voice's range to

a cluster that almost represents a single point. In his analysis of *Jeux*, Stockhausen argued that the boundaries of a group constituted structural articulations, but within those boundaries, the inner workings of pitch, dynamics, timbre, articulation and duration were interchangeable, much like leaves could be rearranged on his metaphorical tree without compromising the integrity of the *Gestalt*.[66] Example 2.14 shows that Ligeti incorporated this second feature of statistical form—randomness within boundaries—since the order of the pitches in each individual voice is hardly predictable. Like the example from *Atmosphères*, the voices each proceed through melodies that contain each of the twelve chromatic pitches. But instead of following the rigorous serial procedure of stating all twelve notes before repeating the series, Ligeti takes a less constructed approach. From any pitch, Ligeti circles above and below, repeating the starting pitch and the four or five pitches adjacent to it with random alternations. Soon one of the circling motions reaches past the established range and introduces new pitches from an adjacent segment of the row. The process then repeats, circling around the new group of four or five pitches in the adjacent register.

[66] See Stockhausen, *Stockhausen on Music*, 43-52.



Example 2.14: *Aventures* mm. 49-84, convergence of voices into cluster and statistical distribution of pitches

Ligeti's circling around in the chromatic melodies stands in stark contrast to serialism's insistence on a consistent ordering of the aggregate. In both the *Atmosphères* and *Aventures* examples, Ligeti uses the materials but not the technique of the serialist composers. Fundamentally, contour is more important than pitch in both Examples 2.13 and 2.14; the outer boundaries of the converging wedge shapes govern both passages. Following through with a statistical deployment of the melodic material inside the boundaries as well, Ligeti complicates the surface with a micropolyphonic canon (in *Atmosphères*) or eschews the precise ordering of the pitches (in *Aventures*). The use of imprecise materials to fill in the shapes can also be seen from an examination of the *Volumina* score page shown in Example 2.8. Ligeti's free-form drawings within the shapes represent the kinds of motions the player must try to reproduce. Despite the imprecise notation, however, the boundaries of the shape must be respected; Ligeti writes to the player, a "dense labyrinth of sound evolves *within the given limits*" [Emphasis mine]. These examples from *Atmosphères*, *Aventures* and *Volumina* correspond exactly with Stockhausen's beech-tree metaphor: the ordering and perception of the individual events does not matter within the boundaries of the sound mass, as long as the overall shape of the structure is recognizably complete.

Though he demonstrated his statistical form ideas in his analysis of *Jeux*, Stockhausen in all likelihood formulated these ideas—both in terms of shape and imprecisely ordered events within boundaries—in the electronic music studio. The transfer of vocabulary from the electronic music studio provides a simple illustration:

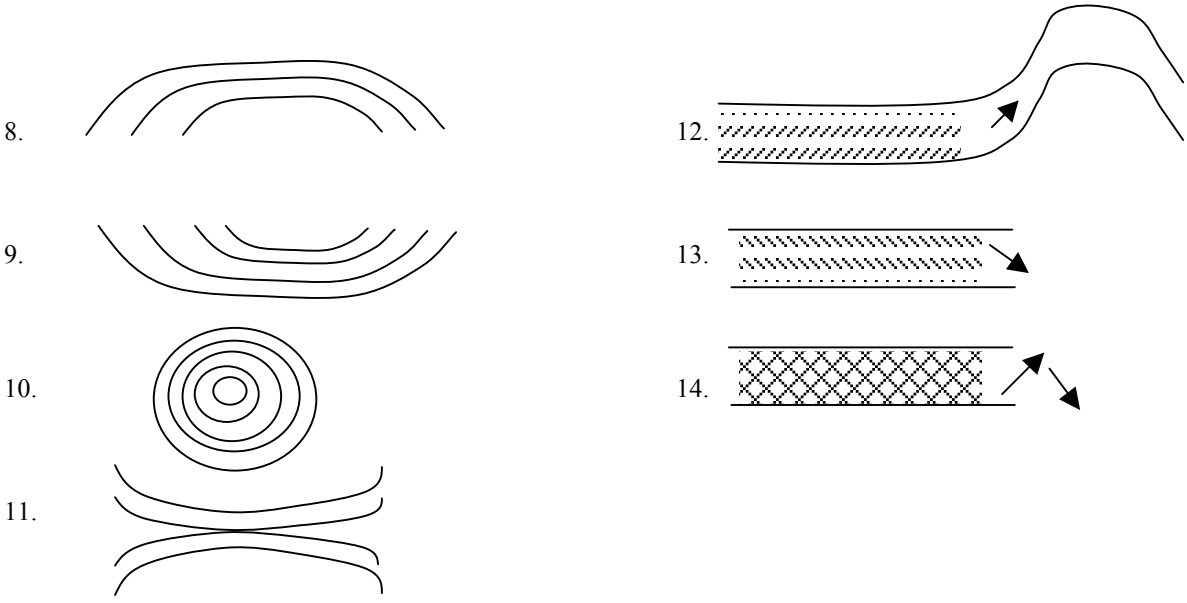
> Statistical methods are introduced into musical composition in terms of bands and band-widths. By band I mean that every aspect is considered as occupying a position between a minimum and maximum value: in pitch, a highest and a lowest pitch; in rhythm, a shortest and a longest duration […][67]

While one could think of sound bands in acoustic music, it was not customary to do so until after electronic techniques gained currency. The idea of bands relates almost directly to the tape used in early electronic music and band-width to the amount of sound—its dimensions, in terms of volume, pitch range, spectra and so forth. This mapping of vocabulary from the electronic to the acoustic suggests a strong connection between Stockhausen's experiments with tape and band-width in the electronic music studio and his resulting statistical form ideas that he theorized in his *Jeux* analysis.

Ligeti's experience in the electronic music studio—not coincidentally, under the tutelage of Stockhausen and Gottfried Michael Koenig—probably also played a formative role in his conceptualization of statistical form. Sketches for both *Glissandi* (1957) and *Artikulation* (1958) reveal that Ligeti was thinking in terms of shape for the sounds he created for the pieces (see Examples 2.15 and 2.16). It is no big leap from these electronic shape-based sketches to the boundary-defined sound mass sketches for *Atmosphères* and *Apparitions* such as the ones shown in Examples 2.7 and 2.10. If Stockhausen's (and Ligeti's) boundary-defined shapes originated in the electronic music studio as band-widths, the idea that the precise order of events within the boundaries is unimportant may have also originated there. For example, dynamic curves were frequently added to a specific sine tone or mixture in an imprecise way—with a number

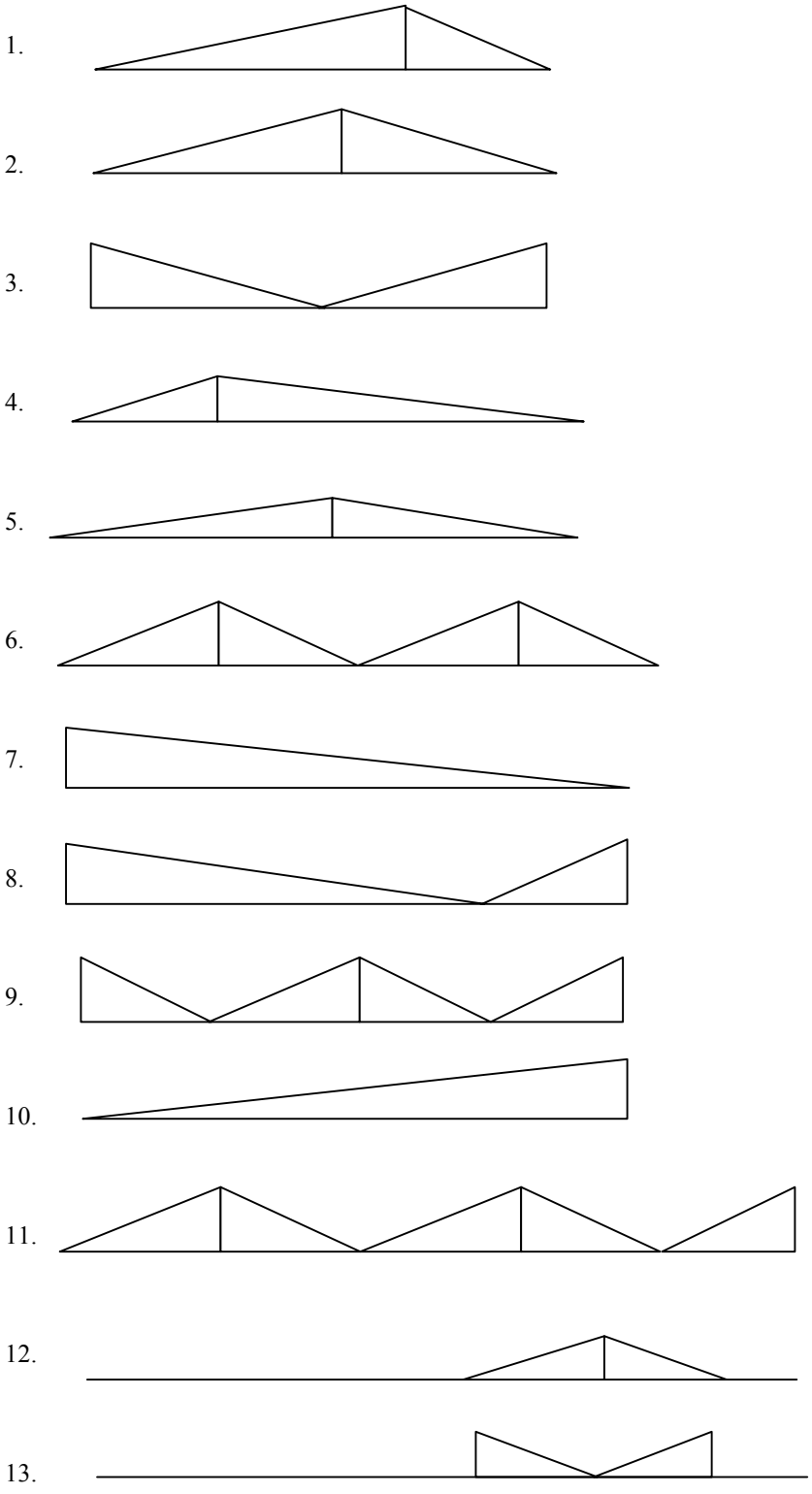
[67] Stockhausen, *Stockhausen on Music*, 51.

of assistants simultaneously turning knobs, trying to replicate Stockhausen's hand-drawn curve.[68] Stockhausen's early experiments with adding dynamics were impossible to control exactly and were thus deeply marked by human imprecision. This imprecision may have given him the idea that "… you can permute or change the order of events without it really making any difference."[69] That is, if one pays attention to the boundaries, the inner composition of the shape can be configured in any number of ways.



Example 2.15: *Glissandi* (1957), sketch of shapes
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

[68] For Stockhausen's description of this process, see *Stockhausen on Music*, 45-46.
[69] Stockhausen, *Stockhausen on Music*, 50.



Example 2.15: *Artikulation* (1958), sketch of shapes

There is compelling evidence that Stockhausen formulated his statistical form ideas in the course of experiments in the electronic music studio. Ligeti's experience in the same studio—not coincidentally, under the tutelage of Stockhausen and Koenig—was also likely critical for his understanding of statistical form. In fact, I will have much more to say about Ligeti's interaction with the discourses of electronic music in Chapter 3. Here, sketches for both *Glissandi* (1957) and *Artikulation* (1958) reveal that Ligeti was thinking in terms of shape for the sounds he created for those pieces. It is no big leap from this kind of electronic shape-based sketches to the boundary-defined sound mass sketches for *Apparitions*, *Atmosphères* and *Volumina*. It remains important, however, that Stockhausen introduced his new statistical form ideas in the music of a canonic figure in the *Jeux* analysis. This move obscured the initial genesis of these ideas in the electronic music studio. Perhaps it seemed necessary to turn to the music of a canonic figure like Debussy to validate the statistical form concepts, since electronic music was still a contentious, relatively inaccessible and poorly understood medium in the mid-1950s. This raises an important point: the Darmstadt composers, despite their rhetoric, relied on historical composers, forms and ideas when it was useful and convenient to do so.

In the case of Ligeti, both *Apparitions* and *Atmosphères* show traces not of *Jeux* per se, but of how Debussy's work was filtered through contemporaneous discourses. Ligeti's reception and understanding of *Jeux* was deeply influenced by Eimert and Stockhausen's extensive analyses, encountered at an influential time in his life, as he

tried to assimilate to the new milieu of the Darmstadt avant-garde. It is clear that Ligeti did not simply recompose *Jeux* by lifting motives, formal designs or orchestrations from the work. Yet Ligeti was deeply influenced by the Darmstadt composers' collective fetishization of *Jeux*. Eimert's analysis may have helped Ligeti re-envision the concept of thematic return in a more subtle way; his vegetative motivic analysis may have led Ligeti toward non-linear ways of creating motivic variation. While Ligeti may not have stepped completely aside from traditional forms and motivic development, his sound-mass music remains radical for its ability to push forcefully upon those boundaries. Stockhausen's statistical analysis, on the other hand, encouraged Ligeti to conceptualize a sound mass based on its outer boundaries and its direction as a whole, even allowing pitches and rhythms to be more or less arbitrary within the boundaries of the mass. The issue is not whether *Jeux* actually exemplifies vegetative form or statistical procedures. In Ligeti's milieu, these ideas were attributed to *Jeux*. Clearly Ligeti's interaction with those ideas—especially in *Apparitions* and *Atmosphères*—provided a compelling foundation for his sound mass works.

Chapter 3

Atmosphères as *elektronische Musik*: The Cologne Studio and Ligeti's Sound-Mass Work

Without question, the rise and proliferation of electronic music had a significant impact on the course of twentieth-century music. The early 1950s saw a veritable explosion in both interest in and the availability of electronic music technology. Electronic means of producing and recording sound had been in development since the late nineteenth century and began to flourish in the 1920s when electronic instruments such as the *theremin* and *ondes Martenot* became available.[1] Though research and experiments with electronic technology steadily increased during the inter-war years, the post-World War II era was an even more fruitful time for the development of electronic music technology. As Peter Manning explains, "The rapid advances in technology as a result of the war, an upsurge of interest from many quarters in new sound techniques, and a generally expansionist economic climate provided sufficient incentives for institutions to provide support."[2]

This chapter will explore the rise of electronic music technology and the discourses that surrounded it, particularly with regard to the *Westdeutscher Rundfunk* (*WDR*) studio in Cologne, Germany, where Ligeti learned electronic composition in

[1] Peter Manning, *Electronic and Computer Music* (Oxford: Clarendon Press, 1985), 1-16 gives a clear, concise history of these developments. See also Joel Chadabe, *Electric Sound: The Past and Promise of Electronic Music* (Upper Saddle River, NJ: Prentice Hall, 1997), 1-31; Lowell Cross, "Electronic Music 1948-1953," *Perspectives of New Music* 7/1 (1968): 32-65; Thom Holmes, *Electronic and Experimental Music: Technology, Music, and Culture*, 3rd ed. (Hoboken, NJ: Taylor & Francis, 2008), 3-41; Richard Taruskin, *Oxford History of Western Music*, Vol. V (Oxford: Oxford University Press, 2005), 175-192.
[2] Manning, *Electronic and Computer Music*, 19.

1957-58. I argue that Ligeti's experiences in the electronic music studio had far-reaching consequences for his acoustic works, particularly *Atmosphères*.[3] I will begin with a history of electronic music, describing the foundations of the Cologne studio and Ligeti's part in its development. In a close reading of *Atmosphères*, I will show that Ligeti's compositional techniques are acoustic adaptations of electronic techniques in circulation in the Cologne studio; I will pay special attention to the discourses established by Eimert, Stockhausen and Koenig, which articulated for Ligeti the broader musical applicability of electronic compositional techniques. Thus, *Atmosphères* is an acoustic re-presentation of the Darmstadt avant-garde's collective understanding of electronic music.

Early Developments in Electronic Music

Interest in electronic music grew quickly after the end of the Second World War. Pierre Schaeffer and Pierre Henry were producing *musique concrète* at their government-funded *Club d'essai* studio in Paris as early as 1948.[4] In the same year Werner Meyer-Eppler, director of the Phonetics Institute at Bonn University, and Robert Beyer of the *Westdeutscher Rundfunk* (*WDR*) began experimenting with a vocoder donated by Bell Telephone Laboratories. Herbert Eimert joined their collaboration beginning in 1951, and the electronic music studio they founded at the *WDR* in Cologne grew to become the

[3] Ligeti has written some about this himself; see in particular "Auswirkungen der elektronischen Musik auf mein kompositorisches Schaffen" *Gesammelte Schriften* Vol. II, ed. Monika Lichtenfeld (Mainz: Schott, 2007), 86-94 and "Musik und Technik: Eigene Erfahrung und subjektive Betrachtungen," *Gesammelte Schriften* Vol. I, 237-261; Hanns-Werner Heister, ed., *Geschichte der Musik im 20. Jahrhundert: 1945-1975* (Laaber: Laaber-Verlag, 2005), 176-181.
[4] Manning, *Electronic and Computer Music*, 19-34; Chadabe, *Electronic Sound*, 26-35.

most important center for electronic music research and production in Germany.[5] The Darmstadt *Ferienkurse* (Summer Courses) meanwhile played a key role in collating, publicizing and disseminating early developments in European electronic music research.[6] In 1950, Beyer and Meyer-Eppler presented three lectures on electronic music and technology at the Darmstadt courses.[7] Just one year later, interest in electronic music had exploded, and two full days of seminars were devoted to the topic of "Music and Technology" at the *Ferienkurse*.[8]

A collaborative spirit amongst the French and the Germans guided research into the development of electronic music between 1948 and 1953;[9] as Pascal Decroupet says, "The early history of *elektronische Musik* shows certain parallels to the situation in Paris,

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[5] Manning, *Electronic and Computer Music*, 43-78; Chadabe, *Electronic Sound*, 35-42; Eimert, "How Electronic Music Began," *Musical Times* 113/1550 (Apr. 1972): 347-49. The studio in Cologne was, until 1956, called the *Nordwestdeutscher Rundfunk* (*NWDR*). In 1956, the *Norddeutscher Rundfunk* (*NDR*) separated from the *Westdeutscher Rundfunk* (*WDR*), which kept the electronic studio. For simplicity here, I bypass the early name difference and refer to the Cologne studio as the *WDR* throughout. See Holmes, *Electronic and Experimental Music*, 56.

[6] This history is traced in Pascal Decroupet, "Elektronische Musik," *Im Zenit der Moderne* Vol. II, ed. Borio and Danuser (Freiburg im Breisgau: Rombach, 1997), 63-85; Gisela Nauck, "Elektronische Music: die ersten Jahre," *Von Kranichstein zur Gegenwart: 50 Jahre Darmstädter Ferienkurse 1946-1996* (Stuttgart: DACO Verlag, 1996), 265-272.

[7] Beyer, "Die Bedeutung der elektrischen Klangerzeugung für die künftige (kommende) Entwicklung der Musik," [The Significance of Electronic Sound Generation for the Future (Forthcoming) Development of Music]; Beyer, "Der Raum als formbildendes Moment in der Tonfotografie—seine Bedeutung für die elektronische Musik" [Space as Form-Building Moment in Sound-Photography—its Significance for Electronic Music]; Meyer-Eppler, "Das Klangfarbenproblem in elektronischen Musik" [The Timbre Problem in Electronic Music]. See *Im Zenit der Moderne* II, 71-72.

[8] Adorno spoke on "Music, Technology and Society;" Pierre Schaeffer lectured *musique concrète*; Meyer-Eppler gave a demonstration of "Possibilities for Electronic Sound Generation" and Eimert gave a talk titled "Music at its Limit." See the program in *Im Zenit der Moderne* II, 79.

[9] Documents from the *Ferienkurse* suggest that the French and German pioneers shared a collective excitement for the potential of electronic music in the early 1950s; see *Im Zenit der Moderne* III, 98-104 and *New Music Darmstadt 1950-1960: A Text and Picture Book*, ed. Hommel and Schlüter (Darmstadt: Internationales Musikinstitut Darmstadt, 1987). Stockhausen, who would become one of the most important proponents of the *WDR* studio and of *elektronische Musik*, in fact had his first experience with electronic music technology at Schaeffer's *Club d'essai* studio in 1952; see Richard Toop, "Stockhausen and the Sine Wave: The Story of an Ambiguous Relationship," *The Musical Quarterly* 65/3 (July 1979): 379-391.

even though in the first place methodological differences which are to become prominent are passed over."[10] The "methodological differences" amount to different definitions of appropriate sonic raw material—Schaeffer and the *musique concrète* camp focused exclusively on pre-recorded sounds drawn from everyday life, while Eimert and the *elektronische Musik* camp preferred to work with sounds that were produced entirely by electronic generators (oscillators, noise machines). However, most of the sound-manipulation techniques applied to the raw material were shared in common between the Paris and Cologne studios—both used filtering equipment, echo and reverberation effects, and ring modulation to hone sonic material. As Thom Holmes points out, the early musical pieces of the German studio were aesthetically similar to the French: "In spite of whatever serialist techniques may have been applied to the composition of a piece, the audio results were often indistinguishable from works created more directly with the sound medium, as in *musique concrète*."[11]

The much-publicized split between the French and German camps became obvious, however, by 1952 or 1953.[12] Schaeffer, for his part, embarked on an immense project to analyze and classify the sonic components of sampled sounds with the intent of

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[10] Pascal Decroupet, *Elektroakustische Musik*, ed. Elena Ungeheuer (Laaber: Laaber, 2002), 38. "Die Frühgeschichte der "elektronischen" Musik zeigt zur Situation in Paris gewisse Parallelen auf, auch wenn von vornherein methodische Unterschiede bestanden, die sich zuspitzen sollen."

[11] Holmes, *Electronic and Experimental Music*, 61.

[12] Manning suggests that there was public disagreement between the French and German camps already at the 1951 *Ferienkurse* (*Electronic and Computer Music*, 30); Decroupet says that the split was first noticed in 1952 (*Im Zenit der Moderne* II, 84) and by 1953 according to Decroupet, "*Elektronische Musik* [was] increasingly a synonym for 'authentic music' in the sense of Meyer-Eppler, i.e. tape-music with electronically generated sounds" (87). "'Elektronische Musik' wird zunehmend zum Synonym für 'authentische Musik' im Sinne Meyer-Epplers, d.h. Tonbandmusik mit elektronisch hergestellten Klängen."

creating the syntax for a meaningful musical language.[13] Eimert and Meyer-Eppler, on the other hand, became increasingly convinced that the true power of electronic sound-production laid in the composer's ability to control every element of the sound. As Eimert says, "We prefer to see its possibilities as the potentialities of sound itself."[14] The idea that the composer builds sounds from the ground up—often according to a serialist scheme—became, for the German school, the true pioneering advance in electronic music. Ligeti, of course, was not present for these early polarizing debates about whether the true future of electronic music lay with *musique concrète* or *elektronische Musik* (since he didn't immigrate until December of 1956). When Ligeti did arrive in Cologne in early 1957 and begin his apprenticeship at the *WDR* under Eimert, Stockhausen and Koenig, he fell into the *elektronische Musik* camp by default. To get a sense of the techniques he would have encountered, let us now turn to the development of *elektronische Musik* at the *WDR* studio in Cologne.

Sound Synthesis at the *WDR*

After spending 1951 and 1952 building the *WDR* studio, Eimert and Beyer premiered their first short, experimental electronic works in concert in May 1953.[15] Shortly thereafter Stockhausen joined the *WDR* studio and began working there regularly.

[13] See Manning, *Electronic and Computer Music*, 29-41.
[14] Herbert Eimert, "What is Electronic Music," *Die Reihe* 1 (English edition, 1958): 1. Translation uncredited.
[15] Eimert, "How Electronic Music Began," 349; Stockhausen, "The Origins of Electronic Music," *Musical Times* 112/1541 (July 1971): 649.

However, he found the electronic instruments and sound-synthesis equipment to be unwieldy at best, as his correspondence from the period suggests:

> I've been in the studio for about a week. The equipment isn't working properly yet and no-one has any experience…there is a beat-frequency generator, which produces sine-tones. These basic instruments for sound production yield nothing usable (you know the whistling sounds you get on the radio when someone pushes the wrong switch—those are the sounds I was talking about, from the generators I mentioned). You can't mean this by "pure-tones" (sine-waves)?[16]

Stockhausen's then much-celebrated use of pure sine tones in pieces such as *Studie I* (1953) and *Studie II* (1954) got off to a rocky start, but his disillusionment yielded to new ideas, as the letter ends with this postscript: "I've tried building up a spectrum myself by playing back measuring tones (pure sine tones) over one another, and trying to balance them dynamically. It's extremely difficult, and hasn't yielded anything reasonable yet."[17] By July 20 Stockhausen had made significant progress with this approach and wrote: "I'm building up sounds from sine-waves for a new piece. That's going very well, and I already have a fair amount of experience with it."[18] By the mid-1950s, the *WDR* studio composers had adopted Stockhausen's sound synthesis techniques as the favored method for handling timbre.[19] According to Ligeti,

> A crucial step for consistent and functional electronic sound-generation was an innovation of Stockhausen's in 1953. He completely renounced the usual electronic instruments and used exclusively generators, most notably those that

[16] Stockhausen's letter to Karel Goeyvaerts (June or early July 1953), quoted in Toop, "Stockhausen and the Sine Wave," 390.
[17] Ibid., 390-91.
[18] Ibid., 391.
[19] Stockhausen claims full credit for discovering the revolutionary potential of using sine tone mixtures for composition in 1953 ("Origins of Electronic Music," 649-50), but Eimert refutes this claim: "[…] in 1952 our technician in Cologne had recorded a great number of multiform sinus-tone patterns on tape from a *Schwebungssummer*" ("How Electronic Music Began," 349). A *Schwebungssummer* is a primitive beat-frequency oscillator or sound-wave generator.

> produced pure sine waves. Only by this measure the previously described perfect control over timbral synthesis was guaranteed.[20]

Each partial (and its relative loudness, which has a strong bearing on timbre) was individually generated in electronic sound synthesis, which represented a new solution to the so far intractable problem of precisely defining, controlling and organizing timbres. Ligeti explains, "Up until now it was not possible to fan out transitional values between two instrumental timbres—how can one mediate between a piano timbre and a horn timbre?"[21] For the *WDR* composers, constructing a continuum of timbres, which could then be serially ordered and deployed in a composition, was one major step toward extending serial principles to all the parameters of the electronic composition.[22] Though Ligeti was himself not yet involved in the studio in the mid-1950s, he internalized its historical trajectory and clearly understood the significance of the serial concept:

> From the serial organization of pitch, the principal of pre-ordering tended to move by extension to the totality of the form. Serial organization means that a continuum is divided according to certain proportions, i.e. discrete elements are transformed into various scales of sorts. These elements are then assembled into a row, and the form is built out of particular combinations of such rows.[23]

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[20] Ligeti, "Über elektronische Musik," *Gesammelte Schriften* I, 129. "Ein entscheidender Schritt zur konsequenten und funktionellen elektronischen Klangerzeugung war 1953 eine Neuerung Stockhausens. Er verzichtete völlig auf die üblichen elektronischen Instrumente und verwendete ausschließlich Generatoren, vor allem solche, die reine Sinusschwingungen erzeugen. Erst auf diese Weise war die zuvor beschriebene vollkommene Kontrolle über die Klangsynthese gewährleistet."

[21] Ligeti, "Über elektronische Musik," *Gesammelte Schriften* I, 128. "Bisher war es nicht möglich, zwischen zwei instrumentalen Klangfarben Übergangswerte aufzufächern—was könnte etwa zwischen einem Klavierklang und einem Hornklang vermitteln?"

[22] See the articles in *Die Reihe* I "Elektronische Musik," (1955; English ed., 1958). On the post-Webernian serial aesthetics of the Köln studio, see Hans Ulrich Humpert, "So begann die elektronische Musik in Köln," *Neue Musik im Rheinland* (Kassel: Merseberger, 1996), 67-72.

[23] Ligeti, "Über elektronische Musik," *Gesammelte Schriften* I, 127-28. "Nach der seriellen Organisation der Tonhöhen tendierte das Prinzip der Vorordnung zur Ausdehnung auf die Totalität der Form. Serielle Organisation bedeutet, dass ein Kontinuum gewissen Proportionen entsprechend aufgeteilt, also in diskrete Elemente verschiedener Größenordnung umgewandelt wird. Diese Elemente werden dann zu einer Reihe gefügt, und die Form wird aus bestimmten Kombinationen solcher Reihen aufgebaut."

According to Ligeti, serial principles provided a flexible means of organizing materials by proportions or intervals. Konrad Boehmer confirms this: "The 'serial' methodology of the Cologne school never conceived of a 'series' as an agglomerate, a simple addition of concrete 'values' (pitch, duration, etc.—as Boulez had done during a certain period). The composers of the Cologne school conceived of a 'series' as a 'modulor' (termed by the architect Le Corbusier), as a *configuration of (possible) proportions*…"[24]

Despite the high hopes of the *WDR* composers, timbral synthesis remained extremely painstaking and difficult with the clumsy studio equipment of the day, and by the mid-1950s, serial control over timbre began again to seem like a pipe dream.[25] When Stockhausen's *Gesang der Jünglinge* appeared in 1956, it offered a new perspective on sine-tone timbral synthesis methodology that prevailed at the *WDR*. Most writers have suggested that since Stockhausen used a recording of a boy singing (a sampled source, as in *musique concrète*), the piece represented a turn away from the dogmatic insistence on sound synthesis. For example, Manning says, "Stockhausen's *Gesang der Jünglinge* (1955-6) provided a major turning-point in the artistic development of the studio, for *against all the teachings of the establishment* the piece was structured around recordings of a boy's voice, treated and integrated with electronic sounds" [Emphasis mine].[26] David Dunn goes even further: "This work [Krenek's *Spiritus Intelligentiae Sanctus*] and Stockhausen's *Gesang der Jünglinge*, composed at the same time, signify the end of the

[24] Konrad Boehmer, "Koenig—Sound Composition—*Essay*," *Electroacoustic Music*, ed. Thomas Licata (Westport, CT: Greenwood Press, 2002), 63. Emphasis Boehmer's.
[25] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 240.
[26] Manning, *Electronic and Computer Music*, 75.

short-lived pure electronic emphasis claimed by the Cologne school. Both works used electronically generated sounds in combination with techniques and sound sources associated with musique concrète."[27]

Manning and Dunn are of course technically correct in their claims that *Gesang* used pre-recorded sounds and that this represented a departure from the conventions of *elektronische Musik* as established by pieces like Stockhausen's *Studie II*. *Gesang* represents less of a departure, however, when we consider the serial ideology that remains the foundation of Stockhausen's aesthetics. As Elena Ungeheuer and Pascal Decroupet write,

> In a structural sense, *Gesang der Jünglinge* is a work of mediation—mediation between understandable speech and pure sonic quality of language, between speech and synthesized sounds, between regular and irregular structures. The mediation between two opposing poles is a serial idea.[28]

It is important to remember that the *WDR* composers—among them Stockhausen, Koenig and Ligeti—had been interested in sound synthesis since the beginning for its potential to give the composer greater control over timbre. According to Ligeti, the significance of *Gesang* is not that it uses a pre-recorded boy's voice, but that Stockhausen continued to try to exploit this sampled source to create a timbral continuum:

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[27] David Dunn, "A History of Electronic Music Pioneers," *Classic Essays on Twentieth-Century Music*, (New York: Schirmer Books, 1996), 98.

[28] Elena Ungeheuer and Pascal Decroupet, "Technik und Ästhetik der elektronischen Musik," *Musik und Technik* (Mainz: Schott, 1996), 128. "Auch in struktureller Hinsicht ist der *Gesang der Jünglinge* ein Werk der Vermittlung—Vermittlung zwischen verständlicher Sprache und reiner Klanglichkeit des Sprachmaterials, zwischen Sprache und synthetischen Klängen, zwischen regelmäßigen und unregelmäßigen Strukturen. Die Vermittlung zwischen zwei einander gegenüberstehenden Polen ist eine serielle Idee."

> In his *Gesang der Jünglinge,* developed in 1955-56, Stockhausen combined electronic sounds with a singing voice; a little later this was followed by a whole series of attempts to mediate between instrumental and vocal timbral areas on the one hand and electronic [timbres] on the other …[29]

Despite the technical problems, the goal of precisely controlling and serializing timbre continued to preoccupy the *WDR* composers and Ligeti throughout the 1950s.[30]

Ligeti's (Late) Arrival in Cologne

Shortly after Stockhausen began working at the *WDR* studio in 1953, Gottfried Michael Koenig joined him there in 1954. Stockhausen and Koenig were without question the most decisive aesthetic influences on Ligeti's electronic music, but the opportunity to study at the *WDR* in Cologne at all was due to Eimert. After Ligeti's hasty immigration to Austria in December of 1956, he and his wife Vera remained in Vienna for a few weeks. He then apparently secured a small stipend through Eimert at the *WDR* and went to Cologne in January of 1957 to begin what was for all practical purposes, an internship in electronic music.[31] As Ligeti says,

> The encounter with the composers in Cologne, being suddenly relocated to the electronic studio in the basement of the *Westdeutschen Rundfunks*, meeting

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[29] Ligeti, "Über elektronische Musik," *Gesammelte Schriften* I, 130. "In seinem 1955-56 entstandenen *Gesang der Jünglinge* kombinierte Stockhausen elektronische Klänge mit einer Singstimme, und darauf folgte wenig später eine ganze Reihe von Vermittlungsversuchen zwischen dem instrumentalen und vokalen Klangbereich einerseits und dem elektronischen andererseits…"

[30] Elena Ungeheuer makes this argument as well in *Elektroakustische Musik*, 24-25, as does Hans Ulrich Humpert in *Elektronische Musik* (Mainz: Schott, 1987), 33-35.

[31] Lukas Ligeti, the only son of György and Vera, told me that his father had applied for numerous visiting professor posts, grants and scholarships after the immigration and Eimert was the only affirmative response he received. Ligeti was extremely grateful for the opportunity. My conversation with Lukas Ligeti was at the Paul Sacher Foundation on March 17, 2008; see also Taruskin, *Oxford History of Western Music* V, 49-53.

> Stockhausen, Koenig, Evangelisti, Helms, Kagel and others there—this was a shock for me, perhaps the best shock of my life.[32]

As Toop suggests, Ligeti entered a new and complicated world without much preparation: "It took him a few months to come to terms with the equipment … there were pitch and noise generators which produced the raw material, and filters, echo chambers and ring-modulators which were used to modify the initial result."[33]

Ligeti stayed for six weeks at Stockhausen's flat in Cologne and, as discussed in Chapter 2, was most certainly influenced by Stockhausen's compositional ideas not only for *Gruppen*, but also for *Gesang* and other projects. Yet once they were in the electronic music studio, it would be Koenig rather than Stockhausen who was the primary influence on Ligeti as Koenig tutored him in the workings of the new machinery and helped him realize his own electronic compositional ideas.[34] As Ligeti later recalled, "Koenig was the best and most helpful person that one can imagine."[35] In particular, Ligeti's involvement in the realization of Koenig's *Essay* (1957) was an experience that seemed to serve not only as his introduction to electronic compositional techniques but also to solidify the long-lasting friendship between the two; all of this reaffirms that Ligeti's

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[32] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 86. "Die Begegnung mit den Komponisten in Köln, plötzlich ins elektronische Studio im Keller des Westdeutschen Rundfunks versetzt zu sein, dort Stockhausen, Koenig, Evangelisti, Helms, Kagel und andere zu treffen, war ein Schock für mich, vielleicht der schönste Schock meines Lebens."
[33] Richard Toop, *György Ligeti* (London: Phaidon, 1999), 56.
[34] See Richard Steinitz, *György Ligeti: Music of the Imagination* (Boston: Northeastern University Press, 2003), 78.
[35] Ligeti, "Beginn in Deutschland: Köln, Darmstadt," *'Träumen Sie im Farbe?' György Ligeti im Gesprach mit Eckhard Roelcke* (Wien, Paul Zsolnay, 2003), 84. "Koenig war der beste und hilfreichste Mensch, den man sich nur vorstellen kann."

understanding of electronic music is heavily indebted to the ideas in circulation—especially between Koenig and Stockhausen—during his apprenticeship at the *WDR*.

Ligeti composed three electronic works while at the *WDR* studio; two of these, *Glissandi* (1957) and *Artikulation* (1958) are fairly well-known, though I will argue that the unfinished and relatively obscure *Pièce électronique Nr. 3* (1957) was more important in terms of Ligeti's transfer of techniques to the acoustic realm. Both Ligeti and Koenig have suggested that *Glissandi* was something of a learning piece: "In the Cologne studio, I realized a first piece, *Glissandi*, which was if anything a finger-exercise for learning the studio techniques."[36] Perhaps his own worst critic, Ligeti was unsatisfied with this first "unsophisticated"[37] attempt and according to Toop, "did not let the work out into the public arena until decades later."[38]

Of the three, Ligeti claimed *Artikulation* as his one electronic work.[39] According to Benjamin Levy,

> The best known of Ligeti's works in the electronic medium, and, by the composer's own account, the most thoroughly worked out of his three tape pieces, *Artikulation* is a critical work in his stylistic development. It is this piece in which his divergence from the prevalent serial practices of the studio of the *WDR*

[36] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 243-46. Koenig echoes the phrase almost exactly in "Ligeti und die elektronische Musik," 12. "Nachdem ich im Kölner Studio ein erstes Stück, *Glissandi*, realisiert hatte das eher eine Fingerübung war, um die Studiotechnik zu erlernen."
[37] Steinitz, *György Ligeti*, 79.
[38] Toop, *György Ligeti*, 57. See also "Auswirkungen der elektronischen Musik" where Ligeti says *Glissandi* is really terrible: "Ich habe früher, im Jahre 1957, noch ein elektronisches Stück im Kölner Studio gemacht, und zwar *Glissandi*, dessen Aufführung ich aber nicht zugelassen haben. Das Stück ist wirklich schlecht" (86).
[39] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 86. *Glissandi* is available on Wergo 60161; *Artikulation* is available on the above as well as Teldec 510998 and 88262.

> is most pronounced, and in which he begins to develop his own language more fully.[40]

Ligeti's compositional method in the work involved both planning and chance, as David Ernst has explained: Ligeti began by producing forty-two basic sounds along a serially-derived timbral continuum, which he then "spliced together and subjected to conventional tape manipulations (tape transposition, reversal, splicing, and overdubbing)."[41] The influence of Meyer-Eppler's ideas about the relationships between grammar, speech and music are in evidence in Ligeti's self-imposed hierarchical scheme of sounds-texts-words-languages-sentences-*Artikulation*.[42] As Koenig has pointed out, the significance of the work lay not only its sounds and the incorporation of music-speech paradigms, but also its chance elements. Ligeti apparently cut up the tape into fragments, put them into paper bags and randomly assembled them—a far cry from the serialist preoccupation reigning at the *WDR*.[43]

While *Artikulation* remains Ligeti's best-known electronic work, the relatively unknown and unfinished *Pièce électronique Nr. 3* is more significant for his later compositional endeavors in the early sound-mass works, particularly *Atmosphères*. *Pièce électronique Nr. 3* was left unfinished in 1957 because of the inadequacy of studio equipment at the time. The forty-eight individual voices that Ligeti called for simply

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[40] Benjamin Levy, *The Electronic Works of György Ligeti and their Influence on his Later Style* (Ph.D Diss., University of Maryland, 2006), 93.
[41] David Ernst, *The Evolution of Electronic Music* (New York: Schirmer, 1977), 39.
[42] Ibid., 40.
[43] Koenig, "Ligeti und die elektronische Musik," *György Ligeti: Personalstil—Avantgardismus—Popularität*, ed. Otto Kolleritsch (Vienna, Universal, 1987), 16. See also Koenig, "Köln müßte es noch einmal geben," *Musik Texte* 11 (2006), 54.

overwhelmed the studio's ability to generate, record and synchronize the sound.[44] In 1996 Kees Tazelaar and Johan van Kreij of the Institut of Sonology realized the work in sound (with digital technology) and released it on CD; the Paul Sacher Foundation holds Ligeti's original hand-drawn score and Schott holds a facsimile of this score.[45] Despite the recent commercial availability of the recording, the score—a work of art in its own respect—remains unpublished. As a result, when scholars mention *Pièce électronique Nr. 3*, they tend to do so in passing and the piece does not command even the slim body of analytical literature afforded the other two electronic works. As Toop says, *Pièce électronique Nr. 3* "remains a curiosity, rather than part of the canon."[46]

Writers often make reference to the fact that the work was originally titled *Atmosphères*—that is, until the orchestral work took over that title.[47] The implied similarity between Ligeti's electronic and acoustic works is more than superficial. Indeed, *Pièce électronique Nr. 3* served as something of a bridge to Ligeti's later acoustic works—the majority of the talk "Auswirkungen der elektronischen Musik auf mein kompositorisches Schaffen" [Influence of Electronic Music on my Compositional Development] is spent connecting the *Requiem,* and to a lesser extent *Apparitions* and *Atmosphères*, to moments of inspiration he gleaned in the electronic studio and particularly to techniques he tried (unsuccessfully) to realize in *Pièce électronique Nr. 3*.

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[44] See Ligeti's comments in Koenig, "Ligeti und die elektronische Musik," 25-26.
[45] *Pièce électronique Nr. 3* appears on BVHAAST CD 06/0701. Evelyn Diendorf and Heidy Zimmermann of the Paul Sacher Foundation were extremely helpful in tracking down a recording of this piece and determining what materials Schott possesses.
[46] Toop, *György Ligeti*, 61. See Steinitz's comments to the same effect in *György Ligeti*, 90.
[47] See Koenig, "Ligeti und die elektronische Musik," 25; Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 86; Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 246.

In the next three sections, I will use the sketches for *Atmosphères* along with the score for *Pièce électronique Nr. 3* to argue for their profound interconnection.[48] Later in the chapter, I will explore connections between *Atmosphères* and works by Koenig and Stockhausen (both music and text) that deeply colored Ligeti's studio experience. The analysis is organized by electronic technique—that is, I read specific passages of *Atmosphères* as reproductions of specific electronic compositional techniques and devices. I will, of course, give detailed descriptions of the technological apparatus available in the Cologne studio in due course, introducing techniques as necessary and relating them to their acoustic counterparts in *Atmosphères*. Though the first half of the analysis focuses on Ligeti's acoustic reproductions of the common *WDR* electronic techniques, it does not represent all of the available compositional techniques of the Cologne studio. The intent of the following is not to give an exhaustive account of the electronic techniques available at the *WDR* (or their acoustic counterparts) but instead, to show that Ligeti applied certain electronic compositional techniques—particularly those that were discussed and theorized by Stockhausen and Koenig—by reassembling them in the acoustic realm in *Atmosphères*.

[48] For an analysis of the connections between *Pièce électronique Nr. 3* and *Apparitions*, see Levy, *The Electronic Works of György Ligeti*, 243 ff.

Additive Synthesis: *Atmosphères*, Introduction and A

Stockhausen's technique of layering together a number of sine waves to produce more complex sounds is technically called "additive synthesis." Using a number of sine tones as partials that match with the harmonic spectrum of a chosen fundamental, composers could electronically produce a sound that resembled the fundamental and its partials as produced by an acoustic instrument.[49] By layering together sine tones that corresponded to a inharmonic spectrum, they could produce sounds that had more texture: noise, roughness, and beats between competing partials characterize the sound rather than the blending typical of partials of the harmonic spectrum. Ligeti describes the technique of additive synthesis, explaining that his compositional process involved generating and recording a number of sine tones together in layers:

> Somewhat simplified, the working procedures of the Cologne studio in the middle of the 1950s could be described as follows: a variable sine tone generator produces corresponding waves in the form of alternating current. The sine tones selected ahead of time by the composer are tape-recorded each with maximum loudness. Making a loop with the tape-recorder, one could record more sine tones in direct succession to be superimposed in a tone mixture. According to a compositional plan, segments of various lengths are cut from the original tape, played simultaneously with sine tones as well as the tone sequence, and this combination is then recorded on to a third tape. During the copying process, loudness may be changed. This new tape, which contains both sequences, would in turn be cut up; the segments would be montaged together with other recorded

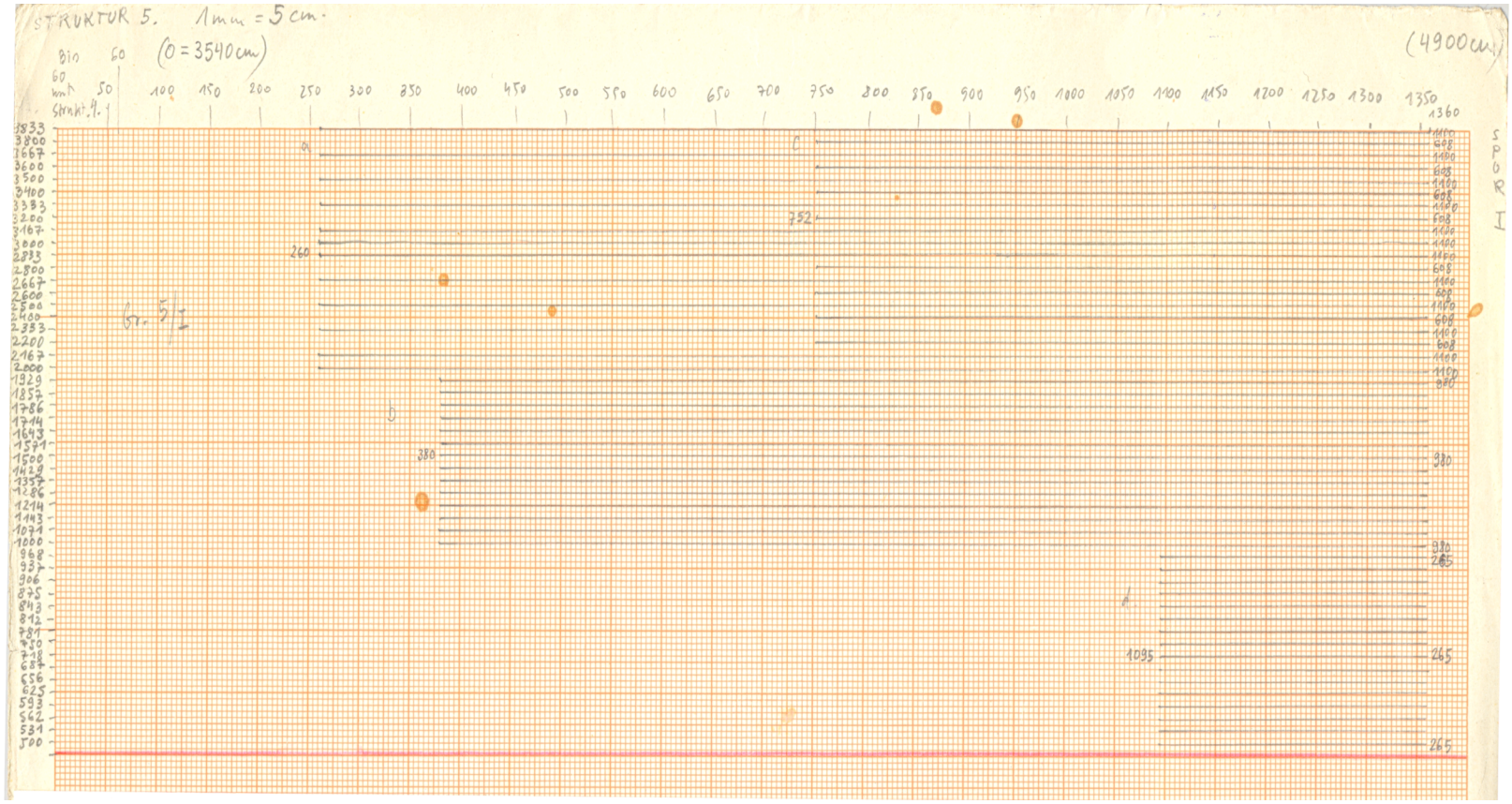
[49] It should be noted that the oscillators available in the early electronic music studio could usually produce four wave forms in addition to the sine wave: the sawtooth wave, the triangle wage, the square wave, and the pulse, which all contain various partials above the fundamental. Whether or not the *WDR* composers used these waves in their compositions is questionable since in their writings they spoke almost exclusively about using sine waves; David Ernst suggests that, "The Cologne composers were likely to restrict themselves to the use of pure sine tones which by definition do not contain any upper partials" (*The Evolution of Electronic Music*, 43; 58).

segments, i.e. taking two assembled tapes, copying them on top of each other, and so forth.[50]

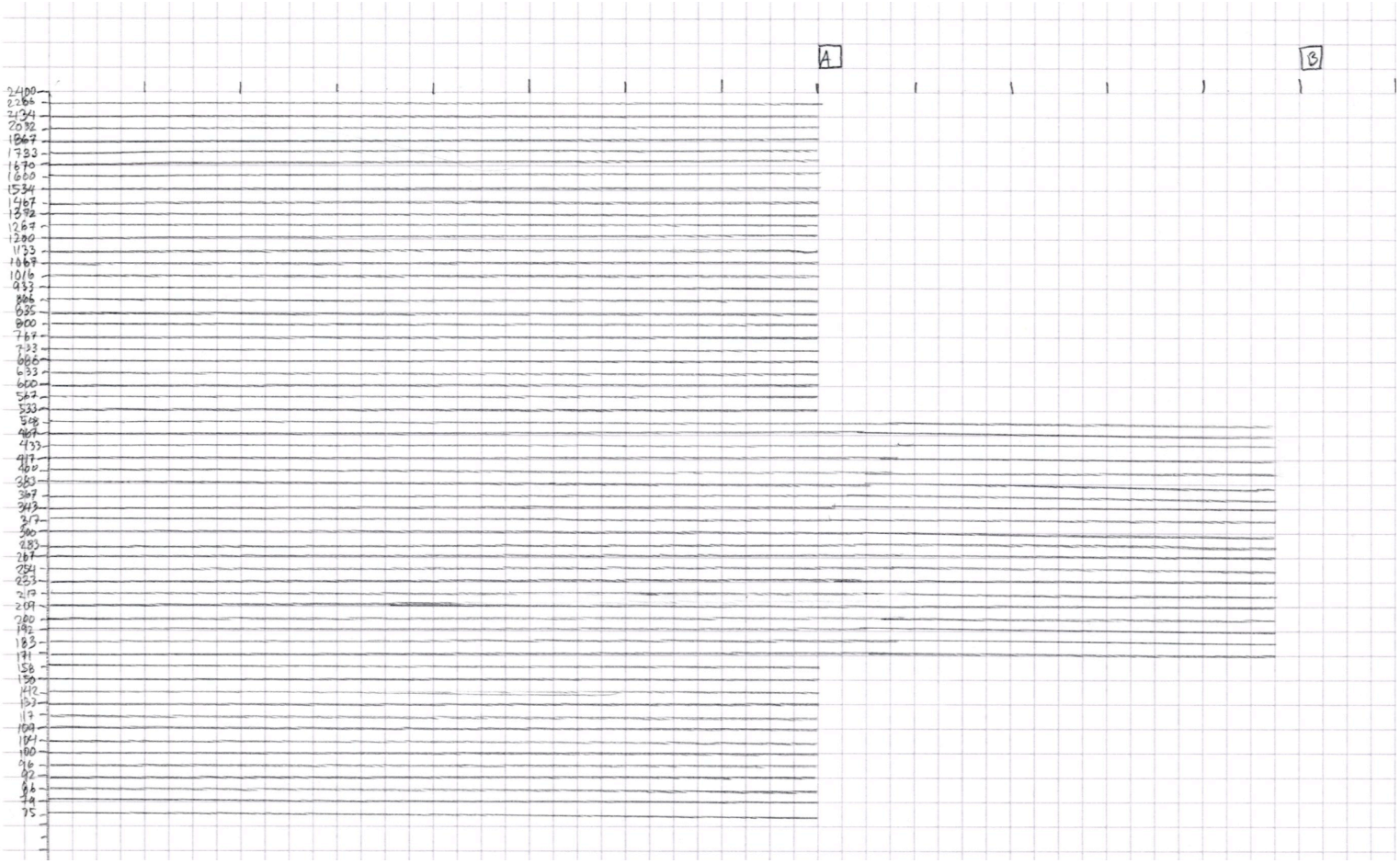
In *Pièce électronique Nr. 3*, Ligeti used precisely this technique of additive synthesis to produce the majority of figures in the piece.[51] As Example 3.1 shows, Ligeti layered together a number of sine tones to create the sonic object. The frequencies of the tones are given on the vertical y-axis of the graph, while the horizontal x-axis corresponds to the temporal dimension. The static sound-mass that results from the layering of sine tones in Example 3.1 is remarkably similar to the opening cluster of *Atmosphères*. The similarity is enhanced when one views the frequencies of the *Atmosphères* cluster in the graphic style of *Pièce électronique Nr. 3* (see Example 3.2).

[50] György Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 239. "Etwas vereinfacht lässt sich die Arbeitsweise im Kölner Studio um die Mitte der fünfziger Jahre folgendermaßen darstellen: Ein abstimmbarer Sinusgenerator erzeugt die entsprechenden Schwingungen im Form von Wechselstrom. Die vom Komponisten im voraus ausgewählten Sinustöne werden auf je einem Tonband mit maximaler Lautstärke einzeln aufgenommen. Mittels geschlossener Tonbandschleifen können auch mehrere Sinustöne, unmittelbar nacheinander aufgenommen, zu einem Tongemisch überlagert werden. Einem Kompositionsplan entsprechend werden Segmente verschiedener Länge aus den ursprünglich aufgenommenen Tonbändern herausgeschnitten und zu Sinuston- beziehungsweise die Tonfolgen simultan abgespielt, und ihre Kombination wird auf ein drittes Tonband aufgenommen. Beim Kopieren können auch Lautstärkeveränderungen durchgeführt werden. Das neue Tonband, das beide Folgen enthält, wird wiederum zerschnitten, die Segmente werden mit anderen Tonbandsegmenten zusammenmontiert, je zwei montierte Bände übereinanderkopiert und so weiter."

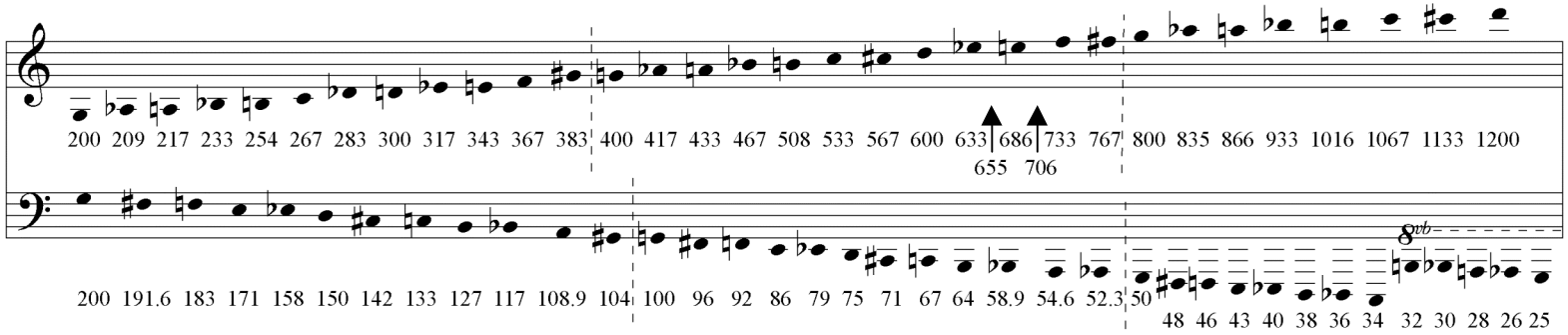
[51] This observation was confirmed in email communication between the author and Kees Tazelaar, who produced a digital realization of *Pièce électronique Nr. 3* in 1996. The realization is available on *His Master's Noise*, BVHAAST CD 06/0701.



Example 3.1: *Pièce électronique Nr. 3* (Gruppe 5/I)
György Ligeti Collection, Paul Sacher Foundation. Used by permission.



Example 3.2: *Atmosphères* mm. 1-13 represented graphically



Example 3.3: Stockhausen's correlation of pitch and frequency in *Gesang der Jünglinge* sketches
Archive of the Stockhausen Foundation for Musik, Kürten, Germany. Used by permission.

In *Atmosphères* Ligeti has, of course, notated the cluster in terms of pitches on the staff for the instrumental players, but as Example 3.2 shows, it is also possible to view each pitch as a frequency rather than representing it as a pitch in musical notation. The simple conversion of notated pitch to frequency is useful for making the comparison between electronic and acoustic music. As Example 3.3 shows, Stockhausen thought in this way, correlating the pitches of the chromatic scale with their corresponding frequencies, in the course of his sketches for *Gesang der Jünglinge*.[52] Example 3.2 applies a similar methodology to Ligeti's cluster. Returning to compare the graphic clusters in Examples 3.1 and 3.2 once again, we can observe that in *Pièce électronique Nr. 3* Ligeti begins with fewer numbers of sine waves and progressively increases the density and complexity of the sound mass. In *Atmosphères*, the process is reversed. The cluster is its most complex and dense at the beginning and it becomes gradually less timbrally complex as instrumental families are eliminated, and narrows in range at rehearsal A.

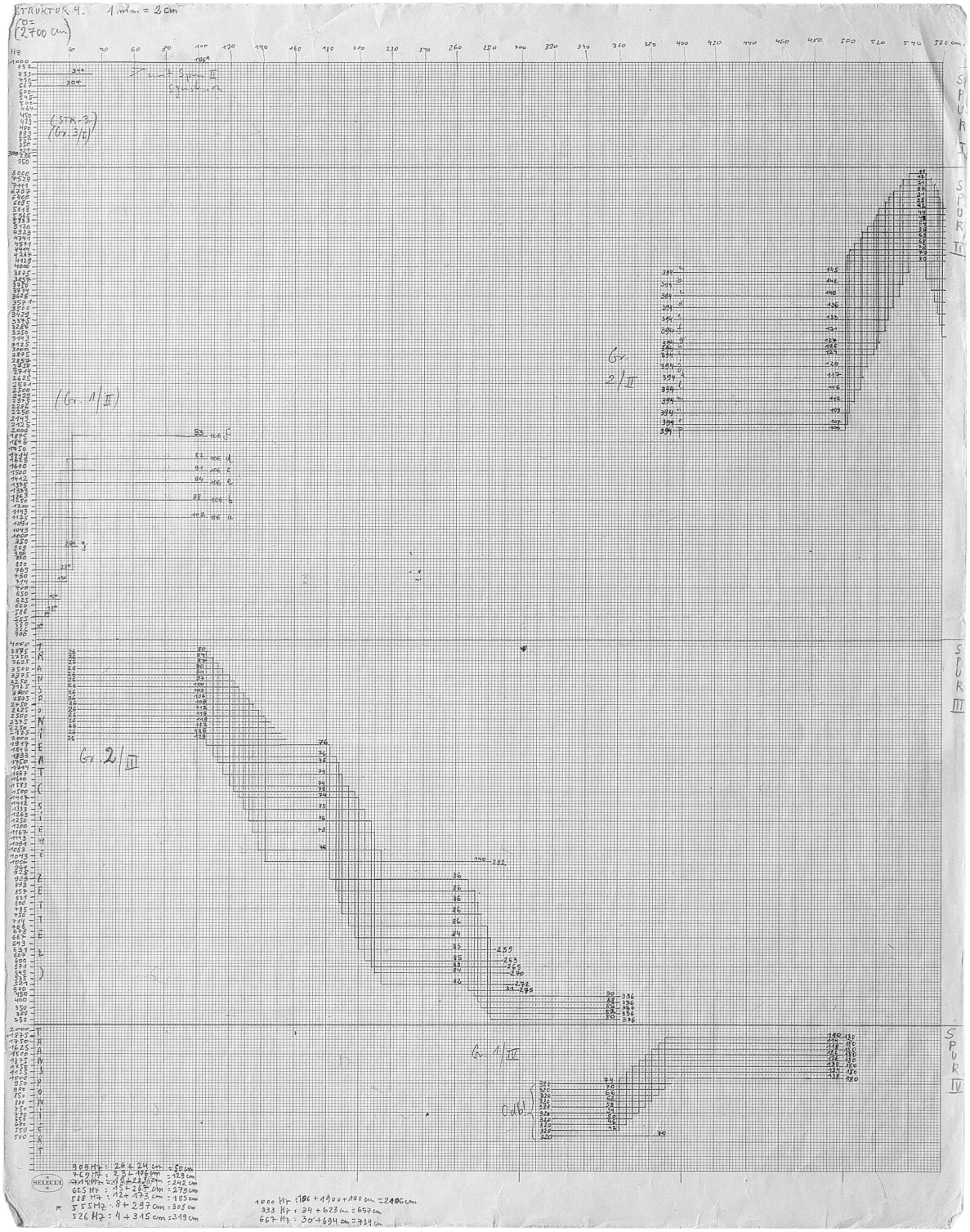
It is important to keep in mind that the comparison between Examples 3.1 and 3.2, while striking, emphasizes a transfer of compositional technique from *Pièce électronique Nr. 3* to *Atmosphères* rather than a transfer of sound *per se*. The sine-tones used in *Pièce électronique Nr. 3* are, as already discussed, tones without partials. If each of the frequencies in the *Atmosphères* cluster is imagined in an analogous way, as a

[52] Karlheinz Stockhausen, *Gesang der Jünglinge*: *elektronische Musik Werk Nr. 8*, facsimile edition (Kürten: Stockhausen-Verlag, 2001).

partial contributing to the additive synthesis, we must admit that each of the "partials" of *Atmosphères* are not pure sine-tones but are rather fundamentals with numerous partials of their own.[53] Thus the sound of the cluster produced in *Atmosphères* is much richer and more complex than the sound produced by the same additive synthesis technique in *Pièce électronique Nr. 3*. As Ligeti says, "The individual harmonic spectra of the instrumental timbres, overlaid and interweaved in non-harmonic ways, create a tangle of sound waves due to the interference of multiple spectral components."[54] The resounding of the partials above each of the fundamentals graphed in Example 3.2 guarantees this result.

Ligeti was squarely within the *WDR* tradition in thinking of (sine tone) partials not as "finished" sounds in and of themselves, but rather as building blocks for more complex sounds in both *Pièce électronique Nr. 3* and *Atmosphères*. As the next section shows, Ligeti pushed additive synthesis to its technical limit in *Pièce électronique Nr. 3*. He failed to realize his ideas in the studio, but this failure actually spawned a whole new way of writing acoustic music.

[53] See also Ulrich Dibelius, *György Ligeti: Eine Monographie in Essays* (Mainz: Schott, 1994), 61.
[54] Ligeti, "Über *Atmosphères*," *Gesammelte Schriften* II, 182. Also quoted in Erkki Salmenhaara, *Das musikalische Material und seine Behandlung* (Regensburg, 1969), 67; Constantin Floros, "Der irisierende Klang," *Lass singen, Gesell, lass Rauschen* (Wien: Universal, 1997), 184; Sigrun Schneider, "Zwischen Statik und Dynamik," *Musik und Bildung* VII/10 (1976): 508. "Die einzelnen harmonischen Spektren der Instrumentalklänge, in nicht-harmonischer Weise übereinandergelagert und ineinandergeschoben, lassen durch die Interferenz von zahlreichen spektralen Komponenten ein Gewirr aus Schwebungen entstehen."



Example 3.4: *Pièce électronique Nr. 3* (score page 4)
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

Pièce électronique Nr. 3 Voice-leading: *Atmosphères*, E and F

Ligeti extends the additive synthesis technique to produce not only static but moving shapes as well in both *Pièce électronique Nr. 3* and *Atmosphères*. Example 3.4 is characteristic of many of the shapes in *Pièce électronique Nr. 3*; the technique of additive synthesis is obvious at the start of the groups where a number of frequencies (shown on the y axis) have been added together to create the sound; the masses migrate in register, however, as voices climb over one another to progressively higher or lower frequencies. This leapfrogging technique exhibits remarkable continuity at the perceptual level—the constant asynchrony between the voices means that it is nearly impossible to perceive which voice is moving at which time. Thus, the mass seems to behave more like a liquid than a solid with discretely defined boundaries. There is a sort of momentum in the passage that could be compared to a ball rolling down a hill. As Ligeti explains:

> […] [T]he pitch changes in the individual voices are carried out through sudden leaps from one frequency to another. Since complex voice-weavings of intervals inserted as individual leaps lay beneath the blurring-boundary, we hear only the changes of the whole complex, not the individual leaps. It produces the impression of a fluid, gradual metamorphosis, a continual change in texture.[55]

Sketch studies for *Atmosphères* reveal that these asynchronous voice-weaving ideas from *Pièce électronique Nr. 3* had a direct bearing on the composition of the acoustic sound-masses as well.

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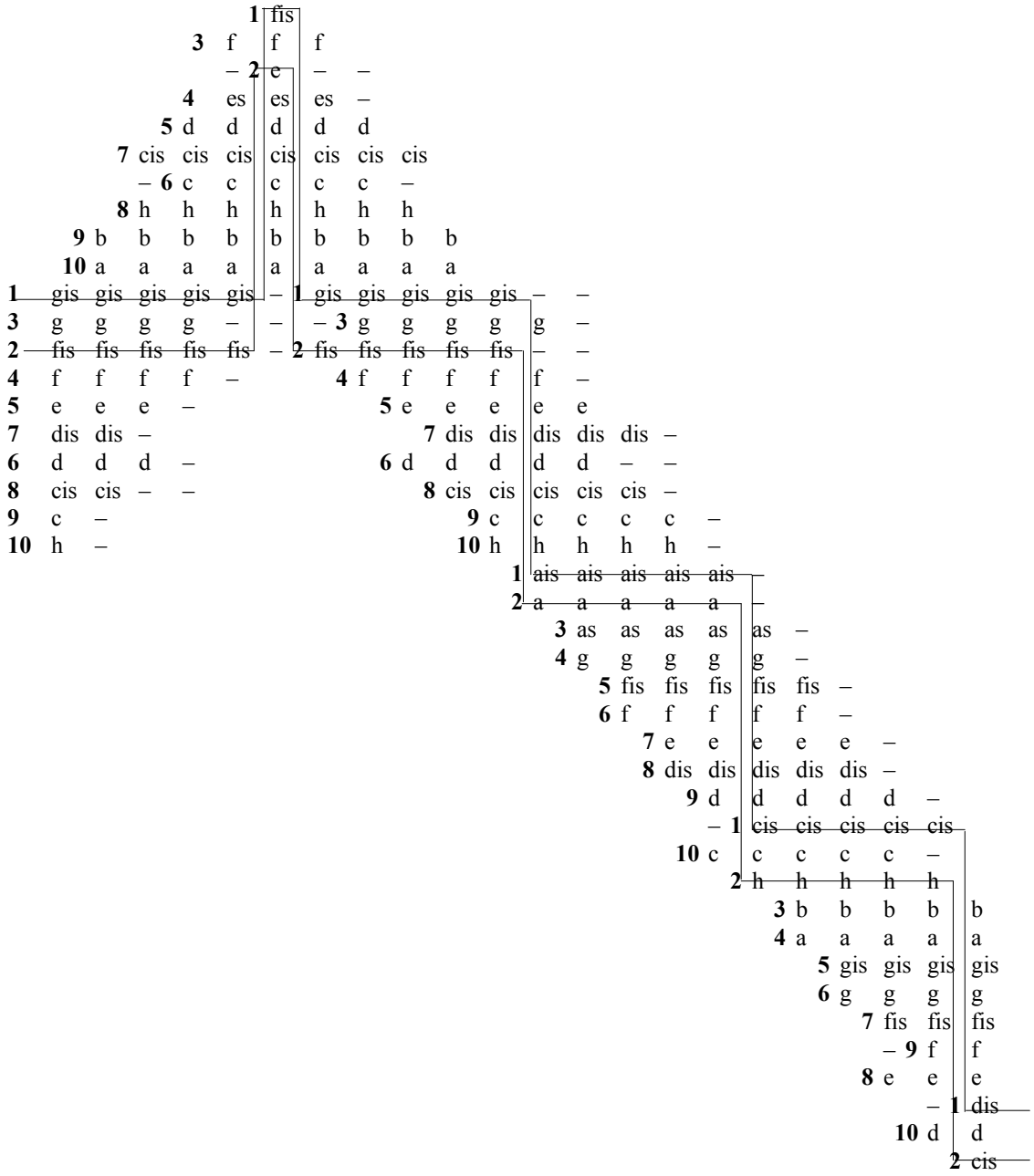
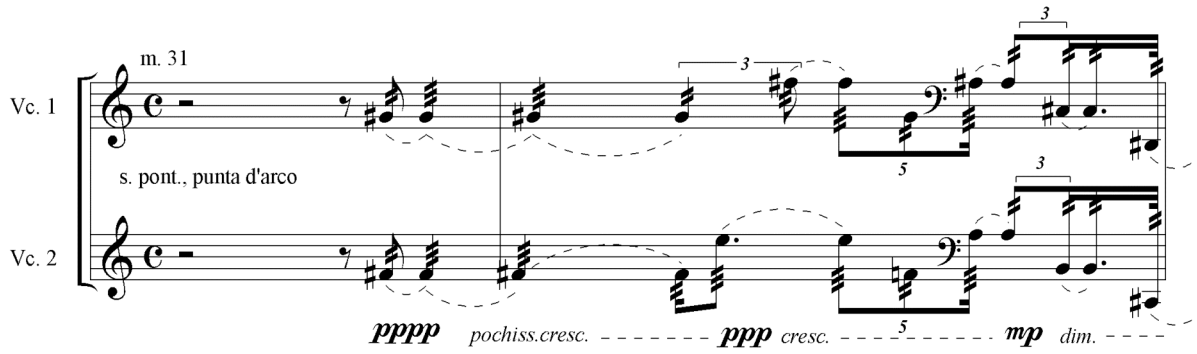
[55] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 248. "…erfolgen die Tonhöhenveränderungen in den einzelnen Stimmen in Form von plötzlichen Sprungen von einem Frequenzwert zum anderen. Da im komplexen Stimmengeflecht die Einsatzabstände der einzelnen Sprünge unterhalb der Verwischungsgrenze liegen, hören wir nur die Veränderung des gesamten Komplexes, nicht aber die einzelnen Sprünge. Es entsteht der Eindruck einer weichen, allmählichen Umwandlung, einer kontinuierlichen Texturveränderung."

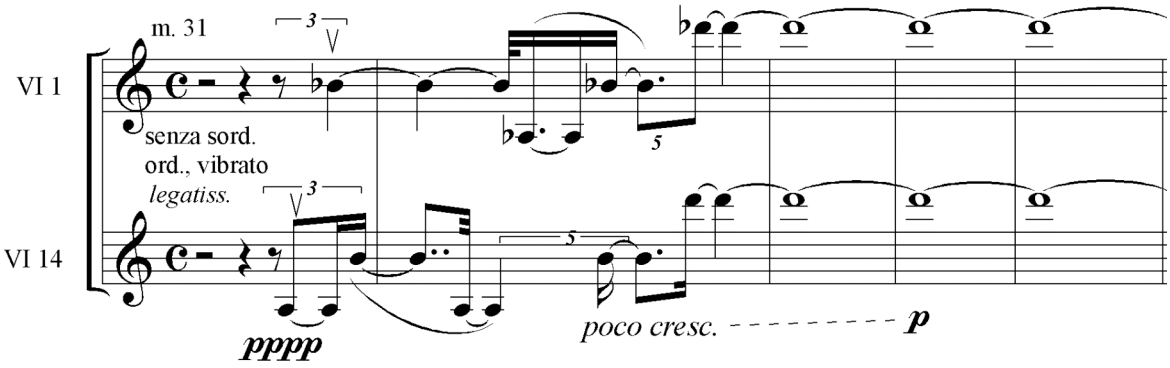
One in fact finds the same leapfrog voice-leading technique in the sketches for *Atmosphères* as is apparent in *Pièce électronique Nr. 3*. Examples 3.5a, 3.6a and 3.7 are transcriptions and annotations of sketches held in the György Ligeti collection of the Paul Sacher Foundation. The sketches contain the pitch names along with numbers, which represent individual voices of particular instrument groups (cellos, first violins, and winds). I have added to the transcriptions of Ligeti's sketches the lines that trace an individual voice across time (which is ostensibly represented along the x axis) to make obvious the connection between these sketches and the score for *Pièce électronique Nr. 3* (refer back to Example 3.4). In tracing each voice individually, one sees that Ligeti is using the same large leaps in frequency in each voice, but arranging them asynchronously so that the mass moves liquidly in a single direction as a whole. By comparing the sketch notation to the pitch and rhythmic notation of the score as shown in Examples 3.5b and 3.6b, one can confirm that the sketches transcribed here do indeed refer to the specified measures of the score.



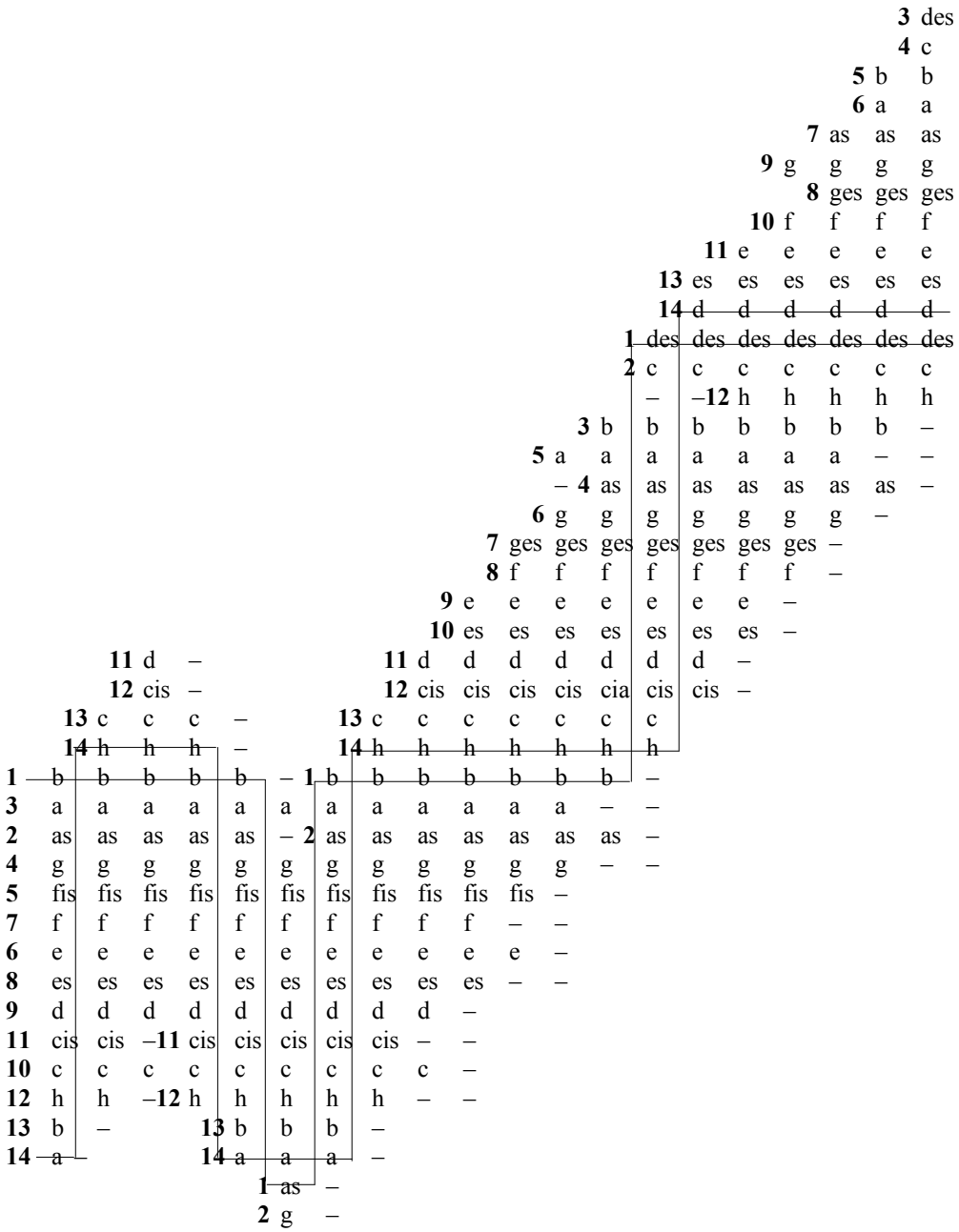
Example 3.5a: Transcription of Ligeti's sketch for *Atmosphères* mm. 31-33, cellos. Lines are my annotations.
György Ligeti Collection, Paul Sacher Foundation. Used by permission



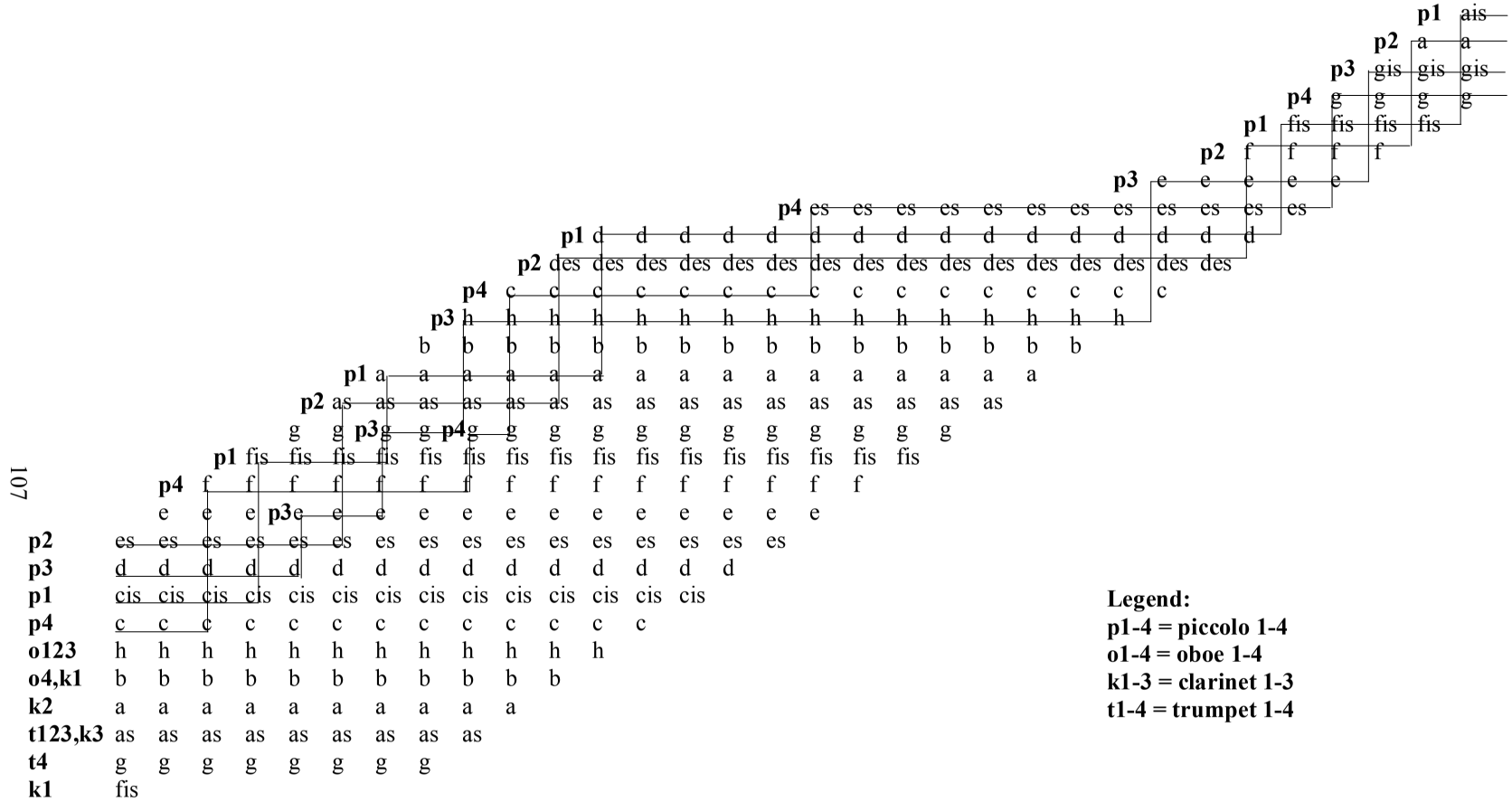
Example 3.5b: Cello 1 and 2, *Atmosphères* mm. 31-33



Example 3.6b: First violins 1 and 14, *Atmosphères* mm. 31-35



Example 3.6a: Transcription of Ligeti's sketch for *Atmosphères* mm. 31-35, first violins. Lines are my annotations.
György Ligeti Collection, Paul Sacher Foundation. Used by permission.



Example 3.7: Transcription and adaptation of Ligeti's sketch for *Atmosphères* mm. 35-38, winds. Lines are my annotations. György Ligeti Collection, Paul Sacher Foundation. Used by permission.

The sketches themselves give further clues to Ligeti's compositional process: the pitch names are notated in pencil, while the numbers representing the individual instrumental voices seem to have been added later in red pen. Thus the shape of the mass as a whole seems to be the primary conception, lending strength to arguments presented in Chapter 2, which suggested that statistical form and shapes moving through space were critical concepts for developing the sound mass techniques. By adding the voice-leading detail later in pen, Ligeti planned the interweaving of the voices as a secondary method for realizing the sound mass. His compositional process thus guaranteed that the sound mass was the primary perceptual effect, while the individual voices remained in the service of the whole.

Example 3.7 provides an especially clear rendering of the direct relationship between *Pièce électronique Nr. 3* and *Atmosphères*. The sketch traces the upward spiral of the winds beginning roughly at rehearsal F. It should be noted that I have eliminated many of the instrumental annotations present in Ligeti's original sketch, since it was simply impossible to include them all legibly. Instead of reproducing the sketch exactly, I have demonstrated the leapfrogging technique as it is deployed through out the passage in the piccolos (incidentally the highest and most prominent instruments in the passage). A similar technique applies to the oboes, clarinets and trumpets, which have been omitted for reasons of space and clarity of presentation.

It should also be noted that Ligeti's original sketch proceeds in the opposite direction—that is, the sketch begins from the highest point and spirals downward, adding

instruments. It is unclear from the sketch material exactly when Ligeti decided to reverse the direction of the passage, though the instrumentation, pitch, and shape of the passage in all versions of the score are preserved except for the mirror reversal. It is possible that Ligeti reversed the direction of the sketch to lend a dramatic quality to the passage when he incorporated it into the context of the larger work—the cello and violin sketches shown in Examples 3.5a and 3.6a do closely resemble the notation in the score, and thus perhaps Ligeti reversed the direction of the winds passage in Example 3.7 between the sketch and the notation of the score, in order to allow the winds to follow from the string ascent.

The leapfrogging compositional technique when deployed in *Atmosphères* takes on a particularly surreal, dramatic quality—the shape seems to move itself almost magically. Perhaps this could also be said of the parallel shapes in *Pièce électronique Nr. 3*, but it should be noted that the shapes from the electronic work are effectively glissandos—the speed of the tape means that even such intricately constructed figures such as those seen in Example 3.4 take up the space of only a few seconds of the piece. In contrast, the parallel passage from *Atmosphères* presently under discussion takes about 50 seconds; this dilated duration creates a sense of dramatic anticipation. In this way, we can again note that in his transference of the electronic compositional technique to the orchestral work, Ligeti managed to turn the acoustic realm into an advantage. That is to say, the same technique is almost more impressive for the listener when acoustically rendered—despite the obvious technical complexity of the additive synthesis in the

electronic version—because Ligeti draws out the procedure in *Atmosphères*, allowing our perception to settle on the passage's directional unfolding. The audience is party to a slow-motion drama between rehearsals E and F, rather than the abrupt glissando-like fluctuations of *Pièce électronique Nr. 3*.

Further Overtone Studies: *Atmosphères*, T

The penultimate section of *Atmosphères* explores a third arena of additive synthesis—timbral synthesis based on absent but implied fundamentals. This section exhibits an otherworldly, crystalline quality due to the strings playing entirely in harmonics.[56] As Ligeti's sketches reveal, he derived the entire passage according to a number of different overtone series. Example 3.8 shows that the strings play various overtone series relating to G, D, A, and C on open strings of the same pitch.[57] As is apparent from studying Example 3.8, the strings play only the pitches of the overtones, never playing the fundamentals. The final column of Example 3.8 however, includes an "implied" fundamental that would account for the pitches assigned each instrument.

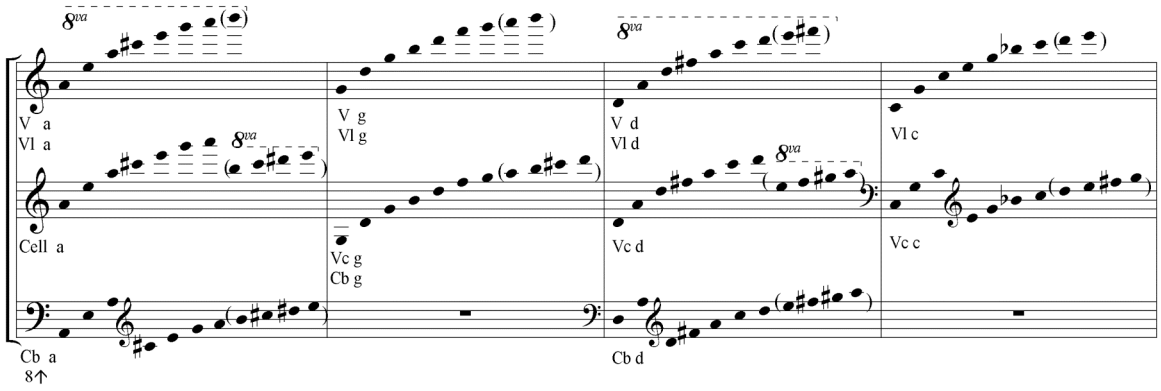
[56] Ligeti also used this technique at the end of his first string quartet, *Métamorphoses Nocturnes* (1953-54). Its appearance in *Atmosphères* a bit more complicated, given the greater number of strings and the addition of artificial harmonics.

[57] In terms of performance practice, it is worthwhile to note that the open strings of the instruments (G, C, D, A) have multiple naturally occurring harmonics that are played by gently touching the appropriate nodes. By avoiding artificial harmonics produced with more complicated stopped or double-stopped string techniques, Ligeti thus ensures that the harmonics will be playable in the fast tempo. Natural harmonics are not only easier to play than artificial, but also project better.

Instruments	Players	Overtone Series	Indicated String	Partials Played	Implied Fundamental
Violin I	1, 2, 9, 10, 11, 12, 13	G	IV (G string)	1-9	G3
	3, 4, 5	D	III (D string)	2-7	D4
	6, 7	A	II (A string)	2-5	A4
	8, 14	C? A?	artificial harmonics	B-flat (6) D-sharp (10)	n/a
Violin II	1, 2, 5, 9, 10, 11	G	IV (G string)	2-9	G3
	3, 4, 12, 13	D	III (D string)	2-6	D4
	6	A	II (A string)	2-4	A4
	7, 8, 14	C? A?	artificial harmonics	B-flat (6) D-sharp (10)	n/a
Viola	1, 2, 3, 4, 5, 6, 7, 8, 9	C	IV (C string)	1-9	C3
	10	D?	artificial harmonic	G-sharp (10)	n/a
Cello	2, 3	C	IV (C string)	3-11	C2
	4	G	III (G string)	2-7	G2
	5, 7, 9	D	II (D string)	2-10	D3
	1, 6, 8, 10	A	I (A string)	1-10	A3
Bass	2, 3, 6	A	III (A string)	3-10	A1
	1, 4, 7	D	II (D string)	2-11	D2
	5, 8	G	I (G string)	2-9	G2

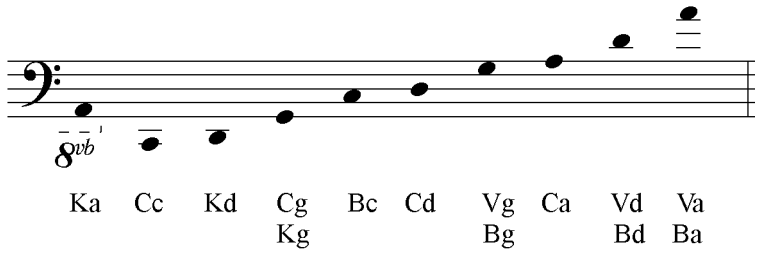
Example 3.8: Partials and implied fundamentals for *Atmosphères* mm. 88-101

That Ligeti was thinking in terms of partial tones above absent but implied fundamentals is borne out in his sketches, given in Examples 3.9 and 3.10. I reproduce Ligeti's sketches exactly here, except for the editorial annotations enclosed in square brackets. Example 3.9 shows that Ligeti both wrote out the overtone series in various octaves for pitch classes A, D, G, and C, and also assigned instrumentation to these series. Example 3.10, which appears later on the same manuscript page as Example 3.9, shows that Ligeti was indeed thinking in terms of the implied, absent fundamentals that would produce the overtone series he wished to use.



[Key: V=Violin; Vl=Viola; Cell and Vc=Cello; Cb=Contrabass]

Example 3.9: Ligeti's sketch for overtone series used in *Atmosphères*, rehearsal T
György Ligeti Collection, Paul Sacher Foundation. Used by permission.



[Key: V=Violin; B=Bratsche/Viola; C=Cello; K=Kontrabass]

Example 3.10: Ligeti's sketch for the implied fundamentals for overtone series of Ex. 3.9

From the sketches, then, it is clear that Ligeti was thinking in terms of overtone series and implied fundamentals for this passage. That Ligeti's use of overtone series in this passage is an extension of the additive synthesis that built *Pièce électronique Nr. 3* is perhaps more difficult to ascertain. However, consider Ligeti's comments on his working procedures for *Pièce électronique Nr. 3* in the Cologne studio:

> I worked in this piece [*Pièce électronique Nr. 3*] with harmonic partial tones of imaginary fundamental tones, for example I selected one time a differential of 250 Hz, and another with 120 Hz, and so forth. If there is for example a tone of 4000 Hz, then the next partial is 4250, the following 4500, then 4750, and so on. There are different harmonic spectra in the piece, where the differentials of the partial tones are always constant. From that follows: through a difference of 250 Hz each, the partials produce an imaginary fundamental of 250 Hz.[58]

In the above quotation, Ligeti describes using additive synthesis to pile up the harmonic partials of an absent fundamental. Due to the phenomenon acousticians call difference

[58] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 92. "Deshalb arbeitete ich in diesem Stück [*Pièce électronique Nr. 3*] mit harmonischen Teiltönen von imaginären Grundtönen, z.B. wählte ich einmal die Differenz von 250 Hz hat, ein ander mal die von 120 Hz, usw. Wenn ein Ton etwa 4000 Hz hat, so hat der nächste Ton 4250, der folgende 4500, dann 4750 usw. Es gibt verschiedene harmonische Spektren in dem Stück, wobei die Differenzen der Teiltöne stets konstant sind. Daraus folgt: bei einer Differenz von je 250 Hz ergeben die Teiltöne einen imaginären Grundton von 250 Hz."

tones, the evenly spaced partials give listeners the impression the fundamental is sounding even if the fundamental itself is not played.[59] "My idea was that a sufficient number of overtones without the fundamental would, as a result of their combined acoustic effect, sound the fundamental."[60] Ligeti goes so far as to speak of an ephemeral *Bassmelodie* that could be implied and perhaps even heard from alternating between the harmonic partials of different, absent fundamentals in *Pièce électronique Nr. 3*.[61] The overtone series of section T of *Atmosphères* are, for all practical purposes, identical to the electronic difference tone technique except for the transformation into the acoustic realm.

The sort of ephemeral quality that Ligeti hoped to capture with the difference tones and absent fundamentals of *Pièce électronique Nr. 3* is, aesthetically speaking, part of the *Atmosphères* passage under consideration as well. The strings playing in harmonics produce a delicate crystalline timbre that is quite distinct. We can also observe a layering process that interprets the significance of the harmonics on multiple levels—the partial tones (harmonic overtones) are themselves rendered in harmonics. It is not merely a coincidence of terminology; by choosing the timbre of harmonics and

[59] The phenomenon is called "summation tones" when the partials seem to be added together, rather than subtracted, to aurally produce the impression of an absent pitch; sometimes difference and sum tones are more generally referred to as "combination tones." A good introduction to sum and difference tones is found in Murray Campbell and Clive Greated, *The Musicians Guide to Acoustics* (New York: Schirmer, 1988), 64-67. This phenomenon was first explained in 1856 by Hermann Helmholtz, *On the sensations of tone as a physiological basis for the theory of music*, 4th ed., trans. Alexander Ellis (London: Longmans, Green and Co., 1912). For more on Helmholtz's discovery of the phenomenon, see Stephan Vogel, "Sensations of Tone, Perception of Sound, and Empiricism: Helmholtz's Physiological Acoustics," *Hermann von Helmholtz and the Foundations of Nineteenth Century Science*, ed. David Cahan (Berkeley, University of California Press, 1993), 259-287, esp. 270-73. See also Brian C. J. Moore, "Loudness, Pitch and Timbre," *Blackwell Handbook of Sensation and Perception*, ed. E. Bruce Goldstein (Maiden, MA: Blackwell, 2005), 423-428 or Moore, *Hearing* (San Diego: Academic Press, 2005), 274-75. Moore calls difference tones "the phenomenon of the missing fundamental" or "residual tones."
[60] Ligeti, *Ligeti in Conversation* (London: Eulenberg, 1983), 37.
[61] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 92.

therefore denying the full-voiced rendering of the partial tones, Ligeti reinforces in the sound the compositional method derived from overtones rather than fundamentals. In this way, Ligeti again seems to have used the acoustic resources to his advantage, reinforcing the compositional intentions of the passage with the timbral palette.

Though the passage deals thoroughly with the overtone series, Ligeti avoids any tonal implication by layering many different overtone series together simultaneously.[62] The superimposition, which is characteristic of additive synthesis, is extended to another level—in addition to layering partial tones of a single fundamental together, the passage layers multiple overtone series of multiple fundamentals together. The result is a chromatically filled cluster between F-sharp 4 and D 6. It seems that the tonal ambiguity of a chromatic field was also important to Ligeti, as he deliberately includes a few instances of artificial harmonics to produce pitches that otherwise would not be represented in the overtone series (see Example 3.8).

As the preceding analysis makes clear, much of *Atmosphères* is indebted to adaptations on the additive synthesis techniques. The piece's static clusters, moving clusters and overtone-derived harmonics can all be traced to the sine-tone additive synthesis that Stockhausen popularized at the Cologne studio and that Ligeti pushed to its technical limit in *Pièce électronique Nr. 3*. The following two sections demonstrate that other basic electronic techniques popularized by Stockhausen and regularly used in the

[62] Ligeti shows his sensitivity to performance issues in choosing overtone series that can be rendered on the open strings of the instruments.

Cologne studio—adding dynamic curves and filtering—also appear in acoustic form in *Atmosphères*.

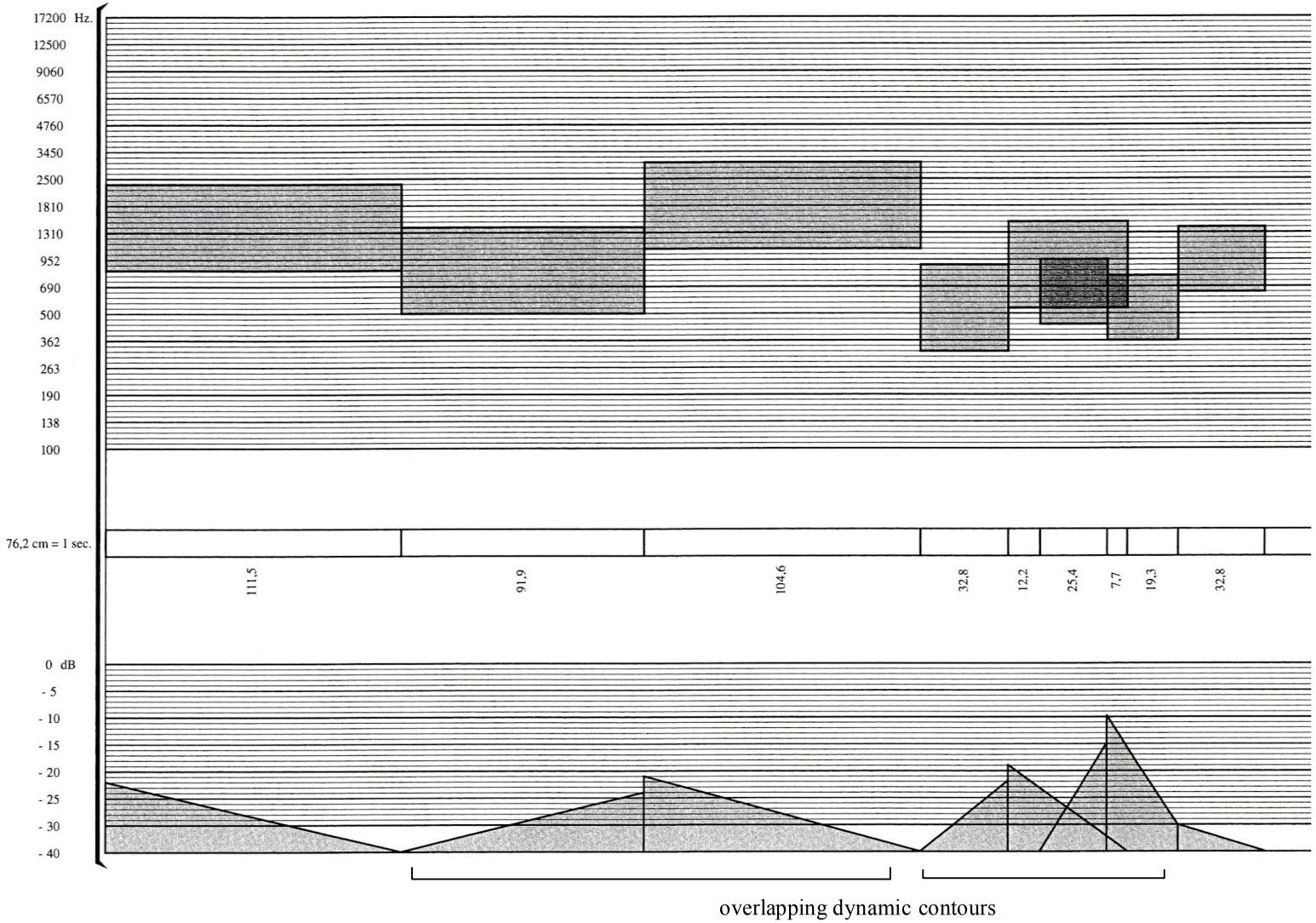
Dynamic Curves: *Atmosphères*, B

With the quarter-note pick up to m. 13 (reh. B), the massive complex sound-mass from the beginning of the work is reconstituted, though with a slightly higher and more compact range: A-flat 2 – E 7. The passage that follows (mm. 13-22) features an alternation between a diatonic (e.g., white-note) cluster and a pentatonic (black-note) cluster. Though all of the pitches in the chromatically-filled cluster between A-flat 2 and E 7 are constantly present, Ligeti accomplishes a sort of perceptual emergence of the white- and black-note sound families using carefully shaped dynamics. As the voices holding the white notes crescendo to *fortissimo*, the voices playing black notes decrescendo to quadruple *piano* (*pppp*). The process is reversed, and the voices playing the black notes crescendo while the white-note voices simultaneously decrescendo. The strings, acting as a neutral timbre, are split between the white and black notes, one violinist playing a white note, the second a black note, and so forth. The white notes are doubled by the bassoon, trombone, trumpet, and oboe, which offer a bright, metallic (brass), and nasal (double reeds) quality to the diatonic cluster. The black notes are doubled by the horns, clarinets, and flutes, which collectively offer a rounder, darker, almost muted timbre to the pentatonic cluster.

The technique of bringing forth one collection solely by changing the dynamic envelopes is an idea that can be traced back to Stockhausen's work in the electronic studio. It is important to bear in mind that in the *WDR* studio the oscillators would have produced tones at a consistent amplitude or volume. While the amplitude settings could be changed, one would have needed to record a tone or a mixture on a tape in order to apply a dynamic envelope to the sound, re-recording the sound with a dynamic curve in a separate step. The current state of the score of *Pièce électronique Nr. 3* for instance, is technically incomplete. Ligeti envisioned sound-envelope curves that would accompany the score, though these were either left incomplete, lost, or both. According to Ligeti,

> In April of 1958, upon the completion of *Artikulation*, I again took up work on [*Pièce électronique*] *Nr. 3* and also began work on the dynamics score. (The representation of pitches and dynamics in a combined score was, due to the character of the piece, only possible in three-dimensional form. Therefore I had to make a dynamic score in separate notation—and coordinate it temporally with the pitch score.) Even following realization attempts proved unsatisfactory and I gave up on this work. The dynamics score remains unfinished.[63]

[63] György Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 246, fn. 6. Though Ligeti alludes to an incomplete dynamic score, the Ligeti Collection at the Paul Sacher Foundation does not contain any dynamic sketches or scores for *Pièce électronique Nr. 3*. "Im April 1958, nach Fertigstellung von *Artikulation*, nahm ich die Arbeit an Nr. 3 wieder auf und begann auch die Ausarbeitung der Lautstärkenpartitur. (Die Darstellung von Tonhöhen und Lautstärken in einer gemeinsamen Partitur wäre wegen der Eigenart des Stückes nur in dreidimensionaler Form möglich gewesen. Deshalb musste ich die Lautstärkenpartitur—mit der Tonhöhenpartitur zeitlich koordiniert—separat notieren.) Da auch weitere Realisationsversuche unbefriedigend verliefen, gab ich die Arbeit an dem Stück bald auf. Die Lautstärkenpartitur blieb unvollendet."



Example 3.11: Stockhausen *Studie II*, score page 4

The idea of treating dynamics separately from pitch can be grasped by studying Stockhausen's *Studie II*, which was produced at the *WDR* in 1954. The score itself (see Example 3.11) shows the frequency (pitch) on the top staff, the length of the tape in centimeters in the middle staff, and the sound envelopes in decibels on the lowest staff. In the "Introduction" to the score, Stockhausen explains a detailed process of choosing sine-tone frequencies, creating mixtures from numerous sine-tones, adding reverberation, and creating a loop of the resulting sound. After this complicated process, Stockhausen explains,

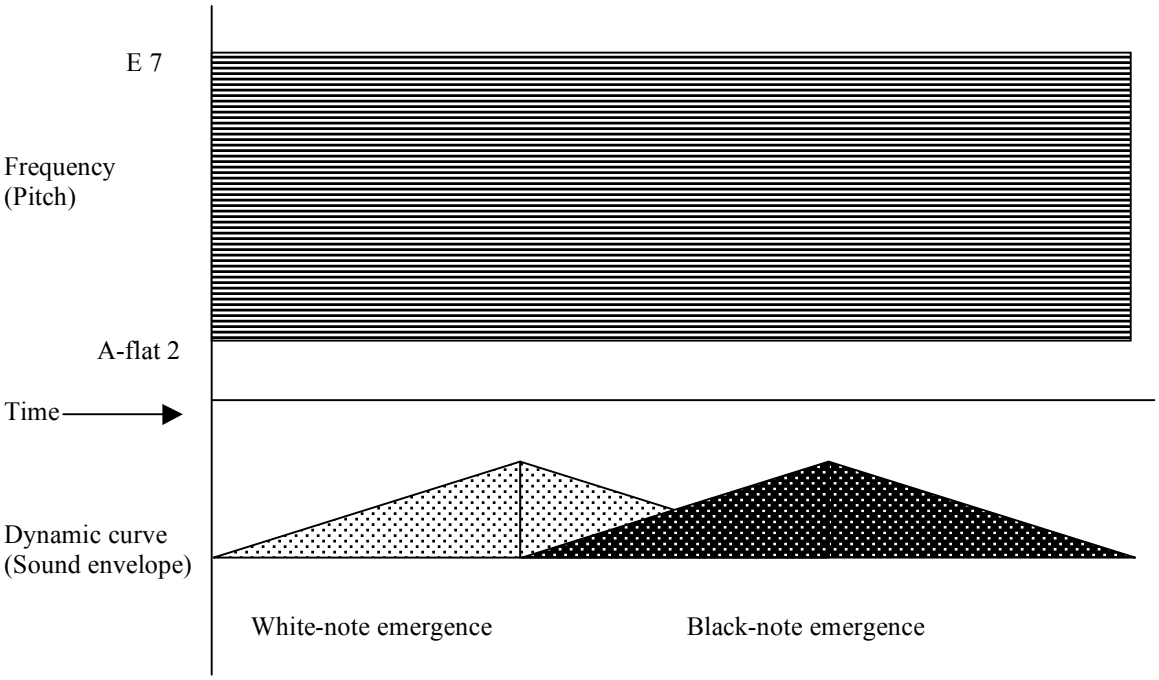
> The remaining tape is cut to the required length in centimeters, glued onto a blank tape loop, and then regulated continuously several times by hand with the prescribed envelope, and thus copied on tape. The best envelope is chosen. Rising envelopes are regulated shapes of the reverberated sounds played backwards, falling envelopes are regulated shapes of the reverberated original tone mixtures played forwards. Although the envelopes are indicated in the score as triangles with straight lines which rise or fall, they are in reality irregular, because the envelopes were regulated by ear.[64]

That is to say, Stockhausen or his assistants produced the dynamic curves by manually turning the volume dial while a mixture was played back, and recorded the result.

Stockhausen's *Studie II* contains a passage that is somewhat similar to Ligeti's dynamic variations at rehearsal B. As Example 3.11 shows, higher-frequency and lower-frequency groups alternate with one another in time, but their prominence in the texture is controlled by the change in the dynamic envelopes (see the bottom stave). Though the frequency ranges of these groups are varied slightly over the course of the passage (e.g.,

[64] Karlheinz Stockhausen, *Studie II* (Kürten: Stockhausen Verlag, 2000), IV. Translation by Suzanne Stephens.

the high group and the low group are not always in the exactly the same range), they compare reasonably well to the white-note, black-note alternations in Ligeti's *Atmosphères*. As Example 3.12 demonstrates, a frequency and sound-envelope graph can be drawn for the passage of *Atmosphères* under consideration that would resemble Stockhausen's *Studie II* greatly. Ligeti, however, adds a degree of continuity by using the dynamic envelopes to bring forth the continuously sounding white-note and black-note groups rather than stopping the sound or literally alternating the groups in time in addition to the dynamic curves, as Stockhausen does.



Example 3.12: Schematic graph of *Atmosphères* mm. 13-22

Filters: *Atmosphères*, G

About three minutes into the work, the winds begin a dramatic upward spiral (reh. E and F) in a passage already discussed in conjunction with additive synthesis techniques. As the winds reach their apparent apex, however, Ligeti abruptly shifts our attention to the opposite end of the frequency spectrum; the frequency drops a full four octaves as the basses play a cluster between C-sharp 2 and G-sharp 2. As Markus Suplicki points out, the combination of the rising strings and winds (mm. 33-39; reh. F) and the subsequent "bottoming out" to the bass cluster in mm. 40-43 (reh. G) together create a dramatic gesture.

> The process of constriction ends in an acutely compacted cluster of piccolos (G-sharp 6 – A-sharp 6) in measure 49. The field G in measure 50 seamlessly follows, which could generate no greater contrast to the foregoing: a cluster in the basses in the lowest register (D 2 – G-sharp 2) and in turn completely static states in all parameters. This event is described accurately through the concept of the *Katastrophe*.[65]

Suplicki's concept of *Katastrophe* stems from the work of Hermann Sabbe, and describes a sudden break in the energetic motion of the music that cannot be reconciled with its surroundings. In aesthetic terms, this accurately describes the passage. However, we can also view this moment in terms of an electronic compositional technique.

Here it is possible to understand the appearance of the basses as the result of filtering. A low pass filter, in particular, would allow frequencies below a certain point to

[65] Markus Suplicki, "György Ligeti: *Atmosphères*—eine unkausale Form?" *Musiktheorie* 10/3 (1995), 240. "Der Prozess der Verengung endet in einem äußerst engen Cluster der Piccoloflöten (gis4-ais4) in T. 49. Übergangslos folgt das Feld G ab T. 50, das keinen größeren Gegensatz zu dem Vorangegangenen bilden könnte: ein Cluster in den Kontrabässen in tiefster Lage (D-Gis) und wiederum völlige Statik in allen Parametern. Dieses Ereignis ist am treffendsten durch den Begriff der *Katastrophe* zu beschreiben."

pass, or continue, while the other frequencies were suppressed. The abrupt change between extremely high to low frequency itself resembles a process of filtering—the persistence of the piccolos at the high range could retrospectively be understood as the result of a high-pass filter, where frequencies above a certain point are allowed to pass. The drop to the low basses at rehearsal G is an abrupt switch of the filter from high-pass to low-pass. Because filters hone a large, complex sound into a bounded, simpler sound the idea of filtering implies a more complex, composite sound in the background—present, though unheard, as it were. This sort of connective tissue mediating between the very high and very low frequencies beneath the audible surface, theoretically, provides a complement to Suplicki's reading of the unmediated polarity between the high/low moments.

To this point I have argued that the techniques for handling timbre and electronic sound that Stockhausen developed at the *WDR* studio were exceptionally important to Ligeti. At this point, I would like to turn to Ligeti's appropriation of techniques that explored the relationship between pitch and time. In his essay "…how time passes…" Stockhausen contended that his experiences in the electronic music studio had shown him that rhythm and pitch can become timbre; that is to say, the speed at which a tone succession is played determines whether we will hear it as individual pitches or as a blurred mass defined by its timbre.[66] However Ligeti suggests that Koenig, rather than

[66] Stockhausen, "…how time passes…," trans. Cornelius Cardew, *Die Reihe* 3 (English ed., 1959): 10-40. The German text "…wie die Zeit vergeht…" can be found in *Die Reihe* 3 (German ed., 1957) or in Stockhausen's *Texte* Vol. I, (Cologne: DuMont Schauberg, 1963), 99-139. See also "Die Einheit der

Stockhausen, conveyed the significance of these ideas to him in hands-on experiments.[67] Either way, the discourse around pitch and time was very much a part of the *WDR* environment in the late 1950s and was certainly discussed by Stockhausen, Koenig and Ligeti. As the following sections show, this discourse clearly influenced Ligeti as he was composing *Atmosphères*.

Bewegungsfarbe: Atmosphères, C

In mm. 23-29 of *Atmosphères* (reh. C) Ligeti applies what is, on the surface, a simple process of rhythmic acceleration. In the passage, each of the string players, flutes, and clarinets alternate between two pitches, gradually building up speed as the passage progresses. The instruments begin playing triplets, then sixteenth notes, then quintuplets, sextuplets and so forth in a tempo of quarter note equals 40. At the climax of the passage the violins are playing between 14 and 20 thirty-second notes per quarter note beat unit, so fast as to be indistinguishable from a tremolo. The gradual progression toward a tremolo in each of the instruments at rehearsal C is related to a perceptual trick that Ligeti seems to have first discovered during his experience with Koenig in the electronic studio. Ligeti was fascinated with the way human perception of sound events changes depending on their speed, and the perceptual gray area between individual events and a blurred *Gestalt* is a recurrent theme in his writings on electronic music. Furthermore, he

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musikalischen Zeit (1961)," *Texte* I, 211-221; in English "The Concept of Unity in Electronic Music," trans. Elaine Barkin, *Perspectives of New Music* 1/1 (Autumn 1962): 39-48.

[67] Koenig also wrote some about these ideas. See "Musik und Zahl I & II (1958)," 7-62, esp. 36-41; and "Die musikalische Zeit (1961)," 224-237 both in *Ästhetische Praxis: Texte zur Musik* Vol. I (Saarbrücken: Pfau, 1991).

consistently suggests that it was Koenig's 1957 composition *Essay*, with which he assisted in realizing, that awakened his interest in the speed of successions.

> In Koenig's *Essay* there are sequences of sine tones, which in some places are understandable as melodic lines, but in others, due to the shortness of the individual tones and the great velocity of the sequences, appear no longer as melodic but rather as a curious agglomeration of pitches.[68]

Ligeti further elaborates on this concept of blurring the perceptual boundary using the metaphor of film: if one watches a sequence of stills at the rate of 16 frames per second, one can see that the sequence is a succession of individual pictures. At the speed of 18 or 20 frames per second, we can perceive something of a continuity, but the film still flickers. At the standard projection speed of 24 frames per second, it is impossible for us to perceive that the film is made of individual still frames.[69] Ligeti became interested in deploying this phenomenon in the aural rather than the visual realm, and he discovered that the aural perceptual boundary was similar to the visual; that is, sound events must be heard at the rate of about 20 per second in order to be perceived as a simultaneity. However, as he points out, the appearance of electronic music was crucial in developing this perceptual blurring phenomenon:

> Experience with the blurring-phenomenon was not really available before 1950, when the proliferation of tape recording started. The quickest trills and figurations that a pianist, flutist or violinist can play, rarely contain more than sixteen individual tones per second. Apparently the neuromuscular boundary in

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[68] György Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 237. "In Koenigs *Essay* gibt es Folgen von Sinustönen, die an einigen Stellen als melodische Linien verfolgbar sind, an anderen jedoch, wegen der Kürze der Einzeltöne und der großen Geschwindigkeit der Tonfolge, nicht mehr melodisch, sonder als eigenartige Anhäufungen von Tönen in Erscheinung treten."

[69] See Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 237.

> our nervous system lies in close proximity to the blurring-boundary for the perception of successive events.[70]

Thus for Ligeti, the idea that discrete tones could be played fast enough so as to sound simultaneously rather than successively is due to his experience in the electronic music studio, especially with Koenig during the composition of *Essay*. The passage under consideration in *Atmosphères* is a prime example of Ligeti's application of this technique in the acoustic realm. He emphasizes the process involved beginning very slowly and gradually increasing the speed in each of the instruments. He thus allows the listener to explore the perceptual boundary—early in the passage, the succession of pitches is definitely perceptible, but quickly the tones blend together and produce a buzzing, trilling sound that could be termed "sound color in motion," or *Bewegungsfarbe*, to use Koenig's term.

Though Ligeti has again transferred the compositional technique fairly directly from the electronic studio into the acoustic realm, there are important differences. First, we should note that Ligeti has notated (in the first violins) a maximum of 20 thirty-second notes per quarter note. At the tempo of quarter note equals 40, this notation calls for the notes to be played at a speed of about 30 notes per second. According to Ligeti himself in the quotation above, the best instrumentalists can only play a trill at the rate of about 16 notes per second, which is not fast enough to cross the perceptual boundary into

[70] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 237. "Erfahrungen mit dem Verwischungs-phänomen gab es aber vor 1950, also vor der Verbreitung von Tonbandgeräten, kaum. Die schnellsten Triller und Figurationen, die ein Pianist, Flötist oder Geiger spielen kann, enthalten selten mehr als sechzehn Einzeltöne pro Sekunde. Anscheinend liegt die motorische Grenze in unserem Nervensystem in der Nähe der Verwischungsgrenze für die Wahrnehmung sukzessiver Ereignisse."

simultaneity. Whether or not it is physically possible to play fast enough to realize Ligeti's notation in this passage is an open question—his work commentaries and interviews show that Ligeti certainly understood that he wrote figures on the edge of performability and that he accepted mistakes or human errors as part of the complex textures of his sound masses.[71]

In his written commentaries, Ligeti often referred to the "micropolyphonic" passages as prime examples of his use of the *Bewegungsfarbe* perceptual boundary-crossing technique.[72] Treating the instruments individually within the micropolyphonic fabric and offsetting their entrances slightly allows one to cross the perceptual boundary from melody into texture much more quickly because the unsynchronized instruments (especially when they are of the same timbre) can easily double or triple or more the amount of notes heard within a certain span of time. In the *Atmosphères* passage under consideration, the large number of individual instruments as well as their staggered entrances contributes to the effect of growing simultaneity of texture rather than the perception of individual pitches. While the mass of voices is crucial to creating the

[71] For example, "Performers have often said 'you cannot play this piece' or 'it is impossible to sing it'. My answer always was, 'it is almost impossible, but just try and you'll almost make it'…all they had to do was to approximate to what they saw in the score both rhythmically and melodically and it did not matter if they made little mistakes—the mistakes had been reckoned with." Ligeti, *Ligeti in Conversation*, 53. About the *Requiem*, Ligeti says that it is acceptable if the choir cannot sing some passages exactly because the resultant 'dirty patches' enhance the overall effect. Quoted in Steinitz, *György Ligeti*, 143-44. Toop, *György Ligeti*, 99-100 also discusses the role of virtuosity in Ligeti's music.

[72] Ligeti cites *Requiem* mm. 103-108, a typical micropolyphonic passage, as an example of his acoustic rendering of *Bewegungsfarbe* ("Auswirkungen der elektronischen Musik," 89); he also suggests the micropolyphony of *Atmosphères* mm. 48-51 is due to Koenig's *Bewegungsfarbe* ("Musik und Technik," 252-261). Benjamin Levy suggests the second movement of *Apparitions* mm. 17-18, which contain the rhythmic offsets of 10 against 9 amount to his application of the phenomenon (*The Electronic Works*, 217-218).

blurred effect in practical terms, each player is also asked to attain maximal speed, even if the given limit is difficult or impossible to achieve.

The relationship between pitch and time brings to the fore another difference between realizing this sort of continuously accelerating passage acoustically rather than electronically. In the electronic studio of the late 50s, the easiest way to speed up a succession of sounds was to play the tape faster. However, this produced a proportional change in the pitch—that is, as the speed increased, the frequency also rose. The other option would have been to cut increasingly shorter segments of tape for each of the ever-shorter durations, and paste them on to a leader tape and record the segment. This process would have preserved the invariance of the frequency (as in *Atmosphères*) but would have been quite labor intensive. In this instance, Ligeti's transference of electronic techniques into the acoustic realm can be understood as a compositional advantage. Once he had gained the inspiration from his experience in the electronic music studio, this example shows that the sound-idea was perhaps easier to realize in acoustic notation rather than electronic techniques, since the invariance of pitch can be easily maintained if so desired.

Statistical Rhythms: *Atmosphères*, H through J

The passage spanning rehearsals H, I and J (mm. 44-54) contains one of the most famous examples of string micropolyphony. Ligeti characterized this passage as a direct result of his internalization of Koenig's *Bewegungsfarbe* and admits, "I have transferred

this technique from the experiences with electronic music into the orchestra."[73] The passage reflects, however, more than just a second acoustic transposition of Koenig's *Bewegungsfarbe*. It shows Ligeti's engagement with the discourses that shaped the standard *WDR* techniques, especially as articulated by Stockhausen in his famous article "…how time passes…."

Stockhausen's article has much in common with Koenig's *Bewegungsfarbe*, in as much as his overarching thesis is concerned with the continuum between discrete sound events and sound events that are played so fast as to become continuous. That Stockhausen was as fascinated with this phenomenon as Koenig and Ligeti is borne out by his remark that "[…] tone color is the result of time structure […]."[74] At one point, Stockhausen admits that despite his sensitivity to the particularities of perception, the complexity of his serial rhythmic apparatus detailed in the article is likely to evade aural comprehension:

> If in the end one carries such polyrhythmic complexes so far that the 'pointillist' hearing of the individual duration-relationships turns into structural hearing, then serial method will be concerned, above all, with such *statistical form-criteria*, with average relationships.[75]

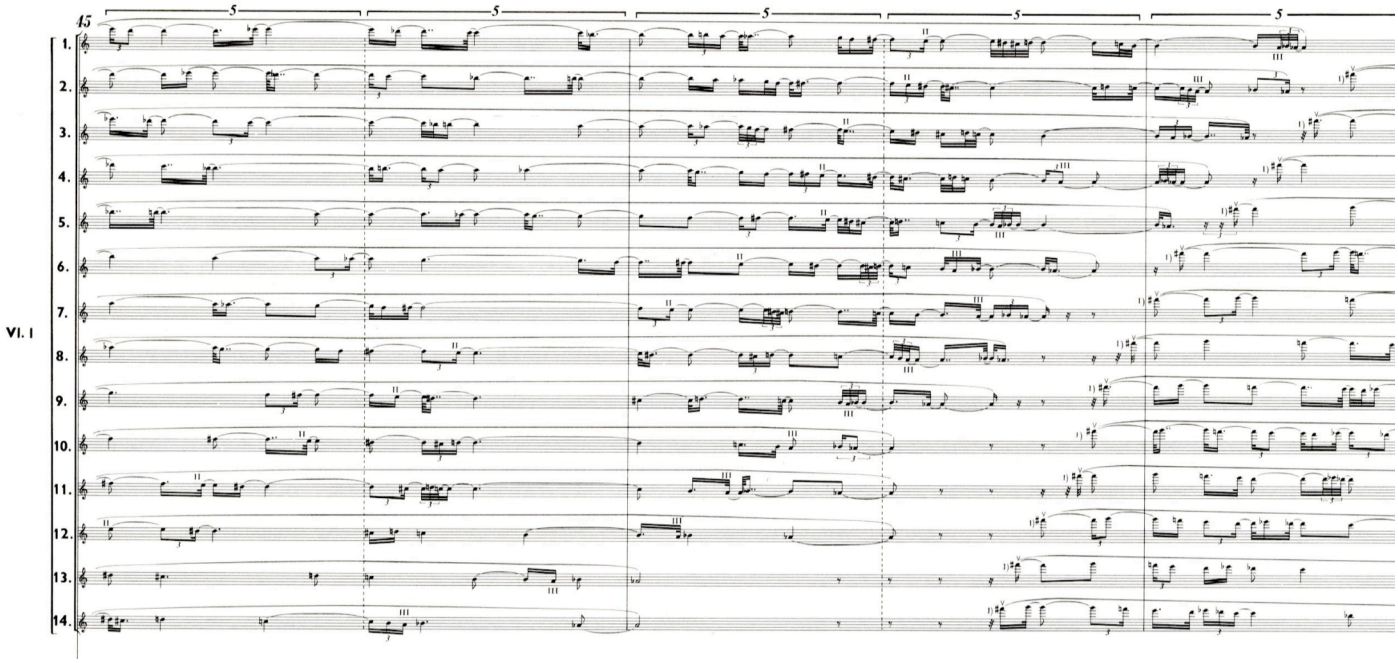
It is here that Ligeti's interaction with Stockhausen's ideas becomes most apparent. In Chapter 2, I argued that the goal-directed motion of the passage (*Atmosphères*, mm. 44-53), which is visible when the individual voices are reduced to structural voice-leading, is connected to Stockhausen's statistical form (see Example

[73] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 253. "Diese Technik habe ich nach den Erfahrungen mit elektronischer Musik auf das Orchester übertragen."
[74] Stockhausen, "…how time passes…," 19.
[75] Stockhausen, "…how time passes…," 15. Stockhausen's emphasis.

2.13). As I also suggested in Chapter 2, it is highly likely that Stockhausen's statistical form ideas were inspired by his work in the electronic studio though he conveniently justified these new ideas by "discovering" precedents in Debussy's *Jeux*. My analysis here follows up on three points—that Ligeti absorbed the statistical, rhythmically-complex techniques that Stockhausen detailed in "…how time passes…"; that they are deeply connected to electronic techniques of the day; and that Ligeti used them to produce the passage under question in *Atmosphères*.

Stockhausen's starting point in the article (much like Koenig's) is to suggest that at a certain point, rhythmic complexity crosses the threshold of human hearing; individual events become imperceptible as such and instead contribute to the timbre of the mass. Ligeti takes up this idea in *Atmosphères*, as Example 3.13 shows. Each voice in this micropolyphonic passage is notated in complex rhythmic notation—some players use quintuplets, some triplets, and some duple divisions. This kind of rhythmic complexity is found throughout the string parts. As Ligeti observes, it would have actually been easier to realize the passage in the quantitative diachronic notation of electronic music, but "[…] such notation is inadequate for a large orchestra: the orchestra 'understands' only traditional rhythmic and pitch notation."[76]

[76] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 257. "Doch wäre eine solche Notation für ein großes Orchester nicht angemessen: Das Orchester "versteht" nur die traditionelle Takt- und Tonhöhennotation."



Example 3.13: *Atmosphères* mm. 45-47, first violins

In addition to the rhythmic complexity built into each voice, Ligeti works out the microcanon in *Atmosphères* by treating the voices as though they are on a slide-rule, using staggered entries and exits (as in traditional canonic techniques) to further weave the voices into complex relationships. Ligeti's goal was apparently to entangle the voices to such a degree that they became imperceptible as individual entities: "Due to the multiple overlays of the smallest intervals between onsets, we hear this music globally."[77] The rhythmic complexity that Ligeti uses to entangle the voices is indebted to Stockhausen's statistical criteria—the rhythmic details of the mass are "[…] presented

[77] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 257. "Wegen der mehrfachen Überlagerung kleinster Einsatzabstände hören wir diese Musik global."

and perceived as a 'complex,' i.e., it could no longer be broken down into single proportional connections."[78]

Stockhausen goes on to suggest that statistical passages are not produced through imperceptible rhythmic complexity alone, but also as a result of heaping up individually-determined events to greater or lesser degrees of density. Clearly Ligeti embraced this idea: "The texture is so thick that the individual voices are no longer perceptible as such, only the whole web is ascertainable as the overriding figure."[79] Thus in this passage, Ligeti has applied two of the criteria Stockhausen outlined in his article—namely that sufficient rhythmic complexity can obliterate the perception of individual relationships and that sufficient density can create the "[…] momentary opacity of a group."[80]

Ligeti—and many subsequent analysts, needless to say—were and are very much fascinated by the idea that here and elsewhere in *Atmosphères*, each individual voice is no longer perceptible but is sublimated to the whole.[81] Ligeti's near obsession with polyphonic web-like structures is often credited to his childhood dream of being trapped in a slowly changing web.[82] While this may be the origin of the technique in Ligeti's

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[78] Stockhausen, "…how time passes…," 32.
[79] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 253. "Das Gewebe ist so dicht, daß die einzelnen Stimmen als solche nicht mehr wahrnehmbar sind, nur das ganze Gewebe ist als übergeordnete Gestalt erfaßbar."
[80] Stockhausen, "…how time passes…," 32.
[81] This paradox is commonly addressed, though two scholars who discuss it most thoroughly include Jonathan Bernard, "Inaudible Structures, Audible Music: Ligeti's Problem and His Solution," *Music Analysis* 6/3 (1987): 207-236 and Marina Lobanova, *György Ligeti: Style, Ideas, Poetics*, trans. Mark Shuttleworth (Berlin: Ernst Kuhn, 2002).
[82] See Ligeti, "States, Events, Transformations," trans. Jonathan Bernard, *Perspectives of New Music* 31/1 (Winter 1993): 164-171, esp. 164-65. The German text appears as "Zustände, Ereignisse, Wandlungen: Bermerkungen zu *Apparitions*," *Gesammelte Schriften* II, 170-74. The childhood dream is also recounted in *Ligeti in Conversation*, 25.

personal imagination, he also admits that the discovery of a method of musically producing this kind of thick web-like structure was due to his experience with electronic music:

> The individual voices do not have the same function as in Classical music but rather they are immersed completely under a global texture, and the metamorphoses, the internal changes in these large networks are essential for the musical form; i.e. the musical shapes are not obtained from individual tones, from individual harmonies, rhythmic configurations or individual voices, but from the confluence of these many individual elements, whereby their individuality largely disappears. This possibility, with regard to the implications for composition and compositional thought, results primarily from the experiences in the electronic studio.[83]

It is possible to go further and say that Ligeti not only learned these techniques from his experiences in the electronic music studio, but that he internalized the discourses that grew up around those techniques. Stockhausen's writing in particular thoroughly works out the consequences of perceptual boundary-crossing, rhythmic complexity and layering of multiple individual events. Ligeti's innovation was to seize upon those implications, and reproduce them in acoustic music when many of his colleagues were saying no progress was possible with "[…] instruments that have become useless […]."[84]

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[83] Ligeti, "Auswirkungen der elektronischen Music," *Gesammelte Schriften* II, 87. "Die Einzelstimmen haben nicht die Funktion wie in der Klassischen Musik, sondern sie tauchen vollkommen unter in ein globales Gewebe, und die Wandlungen, die internen Veränderungen dieses großen Netzwerkes sind wesentlich für die musikalische Form, d.h. die musikalischen Gestalten werden nicht aus Einzeltönen, aus einzelnen Harmonien, rhythmischen Konfigurationen oder Einzelstimmen gewonnen, sondern aus dem Zusammenwirken dieser vielen einzelnen Elemente, wobei ihre Individualität weitgehend verschwindet. Die Möglichkeit, so etwas zu komponieren oder auf diese Weise kompositorisch zu denken, resultiert vor allem aus den Erfahrungen im elektronischen Studio."

[84] Stockhausen, "…how time passes…," 39.

New Notation: *Atmosphères*, K

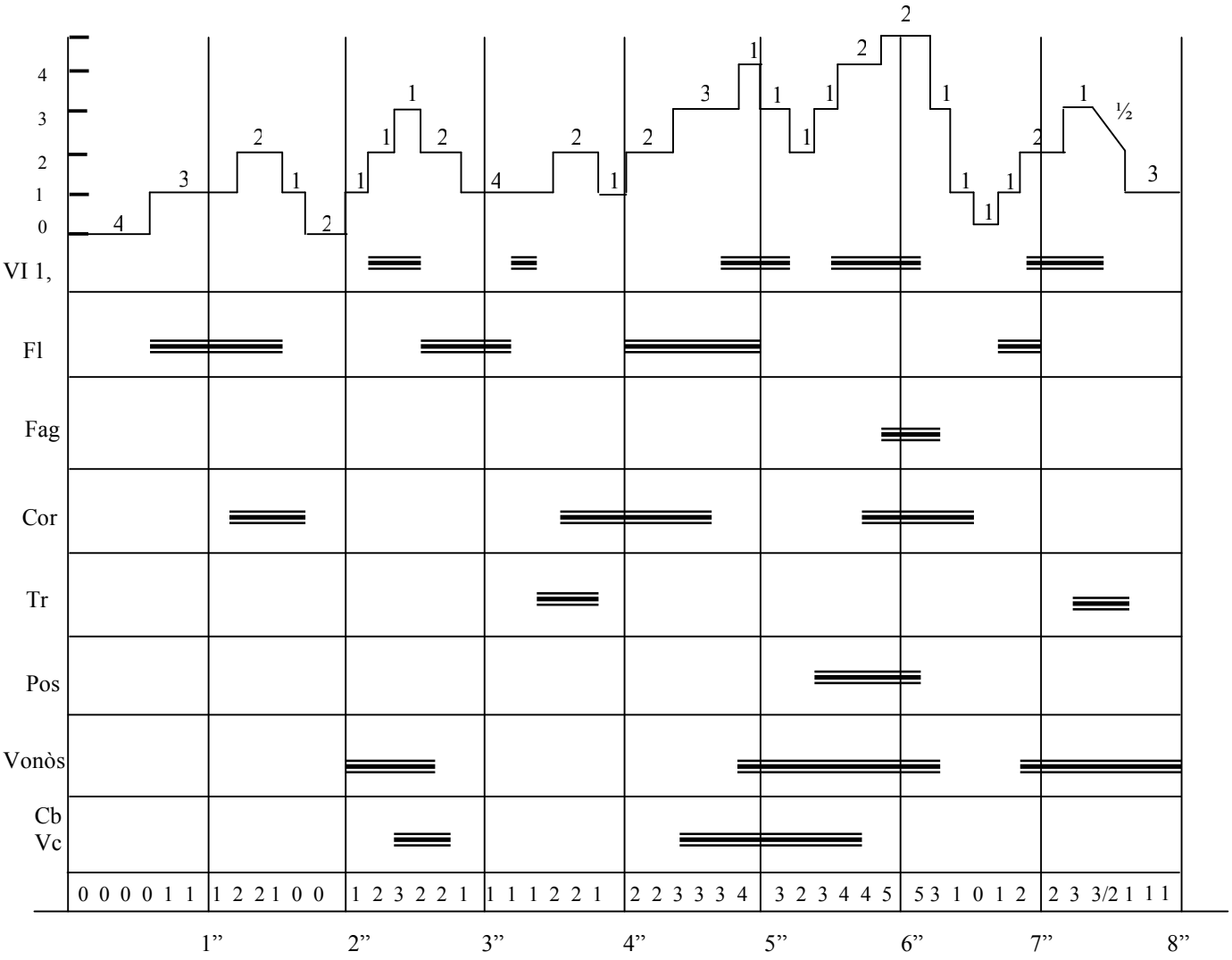
There is strong evidence throughout the *Atmosphères* sketches that Ligeti used the trappings of electronic sketch notation to articulate and represent his ideas before rewriting these sketches in the traditional notation of the score, a translation he deemed necessary if not always expedient. The most obvious parallel between electronic sketch notation and the *Atmosphères* sketches is the use of pure diachronic durations in seconds rather than conventional rhythmic notation. Ligeti's use of diachronic notation to plan *Atmosphères* can be observed throughout his sketches, from the durational sketches that divide the whole piece into section lengths measured in seconds to the calculations of individual events in seconds or fractions of seconds that will later be translated into rhythmic notation.

Example 3.14 is characteristic: across the bottom of the sketch Ligeti labels durations in seconds. This sketch corresponds to just two measures of the score—mm. 55 and 56 at rehearsal letter K. In electronic music, a similar durational sketch in seconds would have to be converted to lengths of tape, usually by multiplying the duration with the tape speed 76.2 cm/sec (or more simply 76 cm/sec), which was the standard tape speed at the Cologne studio. Since this durational notation needed to be transcribed into traditional notation, Ligeti chose a tempo that would make a simple transition—the *Atmosphères* score gives the tempo quarter note equals 60, which corresponds easily with the second-based diachronic durations of the sketch. Each one-second segment of the sketch is equal to a quarter note duration in the score. Along the x-axis directly above the

durations, we can see that Ligeti has divided each second into six equal segments. In fact, the graph paper Ligeti used in the original sketch reinforces this perception[85]—each square of the graph paper, which also corresponds with the integers along the x-axis, is equal to a sixteenth note of a sextuplet group.

Along the y-axis of the sketch are the instruments that are playing in these two measures—first violins players 1 and 2, flutes, bassoons, horns, trumpets, trombones, strings (by elimination, second violins and violas), cellos and basses.[86] The dark horizontal lines are sound bands showing when these instruments play. The integers across the x-axis collate how many instrumental groups are playing at one time—zero means silence, 1 means 1 instrumental group is playing, and so forth. This information is represented graphically at the top of the example, as Ligeti draws a chart showing the densities changing between zero and five instrumental families sounding together. The integers here at the top of the graph spell out the durations for each sound density—4 means the duration of this density is two triplet eighth-notes, and so forth. Thus the chart-like top portion of the example can be understood as a collation of the data from the bottom of the example—Ligeti pictorially represents the changing densities of sound as well as the duration of each particular density.

[85] I have not tried to reproduce this aspect of the sketch in the transcription in Example 3.14.
[86] Vonòs is Hungarian for strings. Flag. is short for *flageolet* tones or harmonics.



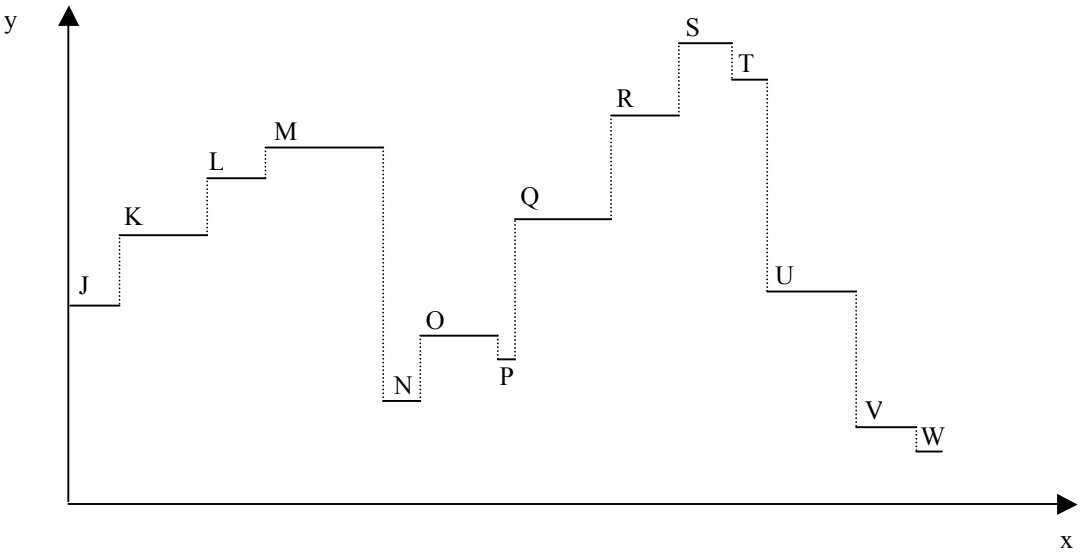
Example 3.14: Transcription and adaptation of Ligeti's sketch for *Atmosphères* mm. 58-59
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

The sketch is a complicated one, representing much information in multiple guises. Take, for instance, the overlapping sound events. They are represented most intuitively as sound bands in the middle of the graph where the eye can understand the

overlaps; the overlaps are calculated in integers at the bottom of the graph, and this information is then represented in a third way, as a chart of changing densities at the top of the graph. One can take a similar survey of the way duration is represented. First, in seconds at the very bottom; secondly in subdivisions by the graph squares (present in the original sketch but not my reproduction of it), thirdly the subdivisions are counted as they relate to sound density and are represented in the chart at the top of the sketch.[87]

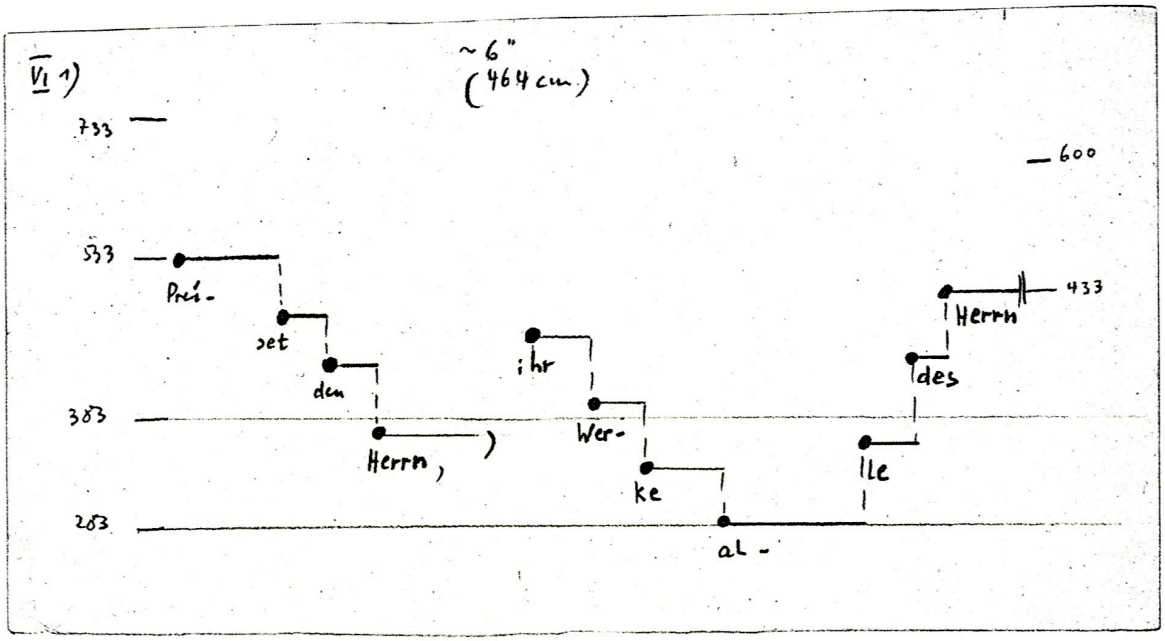
Though it is a complex sketch, Ligeti's use of the chart-like notation at the top of the sketch is not without precedent. Ligeti produces a very similar chart in his article "Musik und Technik" in which he discusses his experiences in the Cologne studio. Example 3.15 reproduces Ligeti's *Beispiel I* [Example 1] from the article. On the x-axis is time, as Ligeti explains, and pitch is represented on the y-axis. Each letter-labeled segment represents a bit of tape, probably a sine tone at a particular frequency recorded on to a length of tape. The dotted lines literally represent the pasting together of the segments. Ligeti uses the example to discuss Koenig's *Bewegungsfarbe* concept. The information conveyed by the *Atmosphères* sketch is somewhat different, yet the similarity between the notations of the two examples is striking.

[87] In the original sketch Ligeti also gives more durational information with the sound bands—they are accompanied by integers describing how many subdivisions of rest before the next entrance and how many subdivisions are devoted to each sound event. Though it is certainly interesting, I have left this information out of my transcription to simplify and streamline Ligeti's already complicated sketch for the purposes at hand.



Example 3.15: Transcription of Ligeti's *Beispiel I* from "Musik und Technik"

Stockhausen also used a similar notation in the sketches for *Gesang der Jünglinge*, as is shown in Example 3.16. Again the x-axis represents time (here 464 centimeters or approximately 6 seconds, according to Stockhausen) while the y-axis shows frequency. Stockhausen apparently made the graphic notation as a guide for pasting together syllables (of varying frequencies recorded on varying lengths of tape) in what amounts to a clear indication of Stockhausen's basic manual compositional technique for the work. The pictorial similarity with the Ligeti sketch is again striking.



Example 3.16: Stockhausen, *Gesang der Jünglinge* sketch
Archive of the Stockhausen Foundation for Musik, Kürten, Germany. Used by permission.

What makes Ligeti's sketch more complex than the similar notation used to demonstrate Koenig's *Bewegungsfarbe* and Stockhausen's compositional process for *Gesang* is that fact that Ligeti uses this type of chart to represent more than the simple pasting together of tape fragments. It is likely that he got the idea for this kind of chart from seeing the notation in the electronic studio with Stockhausen and Koenig. But Ligeti applies the notation in a more complex, multi-faceted way. The chart at the top of the *Atmosphères* sketch graphs the cumulative effect of the underlying information. As I have said, it is a collation of the density and durational information found below it.

Perhaps we can even understand the *Atmosphères* sketch as representative of a multi-channel phenomenon, where each instrumental group is a separate channel and the graph at the top represents the cumulative density of sound when one collates all the channels. In contrast, the similar notation with respect to Koenig and Stockhausen represents a single-channel event—the tape fragments are pasted together to form an essentially linear sound event. In Ligeti's sketch, the temporal linearity of the sound event is not lost (after all, the durations are still included), but the chart actually represents a more spatial dimension—the density of the sound—rather than the more purely two-dimensional (pitch/time) orientation of the Koenig and Stockhausen examples. That Ligeti is able to adapt the notation to represent an essentially spatial phenomenon—sound density—is possible in part because he does not specify pitch in this sketch. Thus, the y-axis is reappropriated to describe sound density rather than pitch height.

Concluding Remarks

Electronic music had a profound effect on Ligeti that goes far beyond a simple acoustic reproduction of electronic techniques; his exposure to electronic music at the *WDR* studio fundamentally changed his way of thinking about music. For instance, the clusters that have become, for many, the hallmark of Ligeti's early mature style are deeply indebted to the electronic experiences. Passages as apparently diverse as the static cluster of the opening of *Atmosphères* and the ethereal penultimate passage of overtones

(reh. T) were built with techniques adapted from Cologne studio—in particular, the additive synthesis that formed the basis of Stockhausen's early electronic works and Ligeti's *Pièce électronique Nr. 3*. As important as the electronic techniques themselves were the discourses that accompanied them. The micropolyphony that underlies certain shimmering sound masses in *Atmosphères* clearly shows the influence of Stockhausen and Koenig's discussions about the mutual interdependence of pitch, rhythm and timbre.

Ligeti's true breakthrough in *Atmosphères* was perhaps to use timbre as a viable, primary tool in the compositional process. This focus on timbre is traceable to the discourse around the *WDR*—one needs to look no further than the utopian writings of Eimert and Stockhausen from the early 1950s hailing the new possibilities for defining and controlling timbre in a way never before possible. But by the time Ligeti began working in the studio in the late 1950s, he says the utopia had faded: "When Koenig composed and produced his 1957 *Essay* in the Cologne studio, the euphoric feelings of the first half of the 1950s, when total sound-synthesis still seemed possible, had passed."[88]

What is particularly remarkable about Ligeti's transference of electronic techniques to the acoustic realm, then, is the way it reawakens the potential for timbre to play a formative role in the compositional and aesthetic plan. In *Atmosphères*, Ligeti overcomes the difficulties of timbral synthesis due to cumbersome equipment, tape noise, inadequate numbers of synthesizers and time constraints of the mostly manual studio

[88] Ligeti, "Musik und Technik," *Gesammelte Schriften* I, 240. "Als Koenig 1957 *Essay* komponierte und im Kölner Studio produzierte, war die euphorische Stimmung der ersten Hälfte der fünfziger Jahre, also noch die totale Klangsynthese realisierbar schien, bereits vorüber."

work. He does so by mapping electronic compositional techniques into the acoustic realm, reclaiming the potential for timbre to play a primary role in shaping passages rather than simply remaining an effect. Though having a good grasp of orchestration is also crucial in this respect, we should not underestimate the importance of the discourse around electronic compositional techniques, which brought timbre forward as the central compositional problem. In fact, Ligeti would not have been able to conceive of the timbral possibilities of the orchestra as he did in *Atmosphères* without having thought so carefully about and experimented with timbre in the Cologne studio. He says as much himself: "…without the experience in the electronic studio the orchestra pieces would not have been composed in exactly the way that they were composed."[89]

If Ligeti indeed felt the studio experience was so important, why did he leave the studio in 1958 and never return to electronic composition? As he says, "I find myself over the past years in a state in which I am a little bit dissatisfied with the acoustic results that one can make in the electronic studio; independent of which studio equipment is available, the perfection of studio equipment is beside the point."[90] Thus, for Ligeti, the electronic studio was not the right forum for the realization of his ideas.

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[89] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 87. "…ohne die Erfahrung im elektronischen Studio wären die Orchesterstücke nicht so komponiert, wie sie eben komponiert worden sind."

[90] Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 77. Seppo Heikinheimo quotes Stockhausen in 1958 in a similar sentiment; see *The Electronic Music of Karlheinz Stockhausen*, (Helsinki: Sanomapaino Oy, 1972), 50-51. "Ich befinde mich in den letzten Jahren in einem Zustand, in dem ich ein wenig unbefriedigt bin über die akustischen Ergebnisse dessen, was man im elektronischen Studio machen kann, unabhängig davon, welche Studioeinrichtung vorhanden ist, es geht nicht um die Perfektion der Studioeinrichtung."

His experience at the Cologne studio, and especially the dialogue with his colleagues Stockhausen and Koenig that he encountered there, nevertheless remains one of the most important in his compositional development. At times Ligeti admits that the experience in the electronic music studio was crucial, yet he is almost always careful to point out that his ideas for the sound-mass music predated his emigration to Cologne. As he says,

> In *Apparitions* and *Atmosphères*—those were the first two instrumental pieces after my work in the electronic studio—there are certain sounds or sound transformations that would not have occurred otherwise. Perhaps I would still have composed them, but not in this form. So that was, as I said, the influence of working in the electronic studio. But I can turn the question round: I already had concepts of static planes of sound that gradually alter, before I had ever heard any electronic music […][91]

Ligeti's insistence on the independent, acoustic genesis of *Atmosphères* is likely a reaction against skeptical critics who claimed that *Atmosphères* was really an electronic piece, or that it somehow was just a trick, an acoustic transposition of electronic music.[92] There is no reason to doubt that Ligeti began to imagine music composed of static planes of sound as early as 1950.[93] But his defensiveness against the charge of electronic influences—his insistence that they are important, yet limited—is another important clue.

As my analysis of *Atmosphères* shows, Ligeti's engagement with the discourses around electronic music may have been *the* catalyst for the realization of the sound masses, though Ligeti was uneasy speaking so directly about the inspiration he gained in

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[91] Ligeti, *Ligeti in Conversation*, 88.
[92] See Ligeti, "Auswirkungen der elektronischen Musik," *Gesammelte Schriften* II, 87 and Schneider, "Zwischen Statik und Dynamik," 506.
[93] See *Ligeti in Conversation*, 88.

the electronic studio. Ligeti preferred to suggest that the ideas for the revolutionary sound-mass works were always in his head and a continual part of his compositional evolution, rather than to claim the direct lines of inspiration from Stockhausen and Koenig's techniques—additive synthesis, *Bewegungsfarbe*, and statistical form—that made these sound masses possible in musical notation. As my analysis of *Atmosphères* makes clear, the modes of thinking he gained in the electronic studio in fact provided compositional tools that were nothing short of invaluable.

Chapter 4

Klangfarbenmelodie amongst the Darmstadt Circle

Ligeti's sound-mass music from the 1960s has long been identified with issues of timbre. His first work after his emigration, *Apparitions* (1958-59), is already quite concerned with timbre in as much as it incorporates musical techniques that extend beyond the usual repertoire of melodic and harmonic sounds, such as percussive string pizzicatos and breath sounds projected through the wind instruments. When Ligeti began composing sound-mass works with a "continuous" texture, such as *Atmosphères* (1961), his reputation as a *Klangfarben* (timbre) composer quickly cemented.[1] Ligeti probably helped establish this reputation for himself; in the program notes for the 1961 premiere of *Atmosphères* at the *Donaueschinger Musiktage*, he wrote:

> In this musical form there are no events, but only states, no contours and shapes, but only unpopulated, imaginary musical space; the *Klangfarben*, which becomes the actual carrier of the form—detached from the musical shapes—has intrinsic value.[2]

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[1] See Theodor Adorno, "Funktion der Farbe in der Musik (1966)," *Darmstadt-Dokumente I*, ed. Heinz-Klaus Metzger and Rainer Riehn (Munich: Edition Text + Kritik, 1999), 266, 306; Andreas Beuermann and Albrecht Schneider, "Struktur, Klang, Dynamik: Akutische Untersuchungen an Ligetis *Atmosphères*," *Für György Ligeti: Die Referate des Ligeti-Kongress Hamburg 1998* (Laaber: Laaber Verlag, 1991): 311-29; Gianmario Borio and Hermann Danuser, eds., "Klangkomposition," *Im Zenit der Moderne* Vol. II, (Freiburg im Breisgau: Rombach, 1997), 282-96; Harald Kaufmann, "Strukturen im Strukturlosen," *Melos* 31/12 (December 1964): 391-98; György Ligeti, *Ligeti in Conversation with Péter Várnai, Josef Häusler, Claude Samuel and Himself* (London: Eulenberg, 1983), 38-39; Ove Nordwall, *György Ligeti: Eine Monographie* (Mainz: B. Schott's Söhne, 1971), 9-22; Erkki Salmenhaara, *Das musikalische Material und seine Behandlung in den Werken* Apparitions*,* Atmosphères*,* Aventures*, und* Requiem *von György Ligeti* (Regensburg: Bosse, 1969), 22-24 and 84-85; Richard Steinitz, *György Ligeti: Music of the Imagination* (Boston: Northeastern University Press, 2003), 96-113; Richard Toop, *György Ligeti* (London: Phaidon, 1999), 74-80.

[2] György Ligeti, "*Atmosphères*," *Gesammelte Schriften* Vol. II, ed. Monika Lichtenfeld, (Mainz: Schott, 2007), 180. "In dieser musikalischen Form gibt es keine Ereignisse, sondern nur Zustände, keine Konturen

In the years after he wrote that description of *Atmosphères*, Ligeti changed his mind about the relevance of timbre in his sound-mass works, saying that, "It is rather superficial to lay too much emphasis on timbre."[3] He disputed in particular the restrictive view that he was a *Klangfarben* composer who belonged in "the same pigeon-hole with Penderecki."[4] Nevertheless, the idea that timbre is intrinsically valuable rather than ornamental and thus bears some structural or formal weight in Ligeti's sound-mass works remains a compelling one.

Timbre is a complex sound phenomenon, defined only as the difference in quality between two sounds that are otherwise equivalent in pitch and loudness.[5] As discussed in Chapter 3, early proponents of electronic music had hoped to precisely define and catalog timbres, and thus to exploit timbre as a structural dimension in their compositions, but ultimately failed to fully realize this goal. Timbre is difficult to apprehend analytically as well, but one reasonable representation of timbre is the harmonic spectrum.[6] Each pitch we hear is produced from a combination of the fundamental, which is usually the loudest, and the overtones, which resonate subtly above the fundamental and have an enormous

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und Gestalten, sondern nur den unbevölkerten, imaginären musikalischen Raum, und die Klangfarben, die eigentlichen Träger der Form, werden—von den musikalischen Gestalten losgelöst—zu Eigenwerten."

[3] Ligeti, *Ligeti in Conversation*, 39.

[4] Ligeti, *Ligeti in Conversation*, 39.

[5] This definition originated in the mid-1800s in the work of Herman Helmholtz (*On the Sensations of Tone as a Physiological Basis for the Theory of Music*, trans. A. J. Ellis, London: Longmans and Green, 1912). See Murray Campbell and Clive Greated, *The Musician's Guide to Acoustics* (New York: Schirmer, 1987), 141-142.

[6] Campbell and Greated, *The Musician's Guide*, 144.

bearing on timbre.[7] The harmonic spectrum is a graph that models the relationship between the fundamental and the overtones when an instrument plays a particular pitch. Since the unique quality of certain instrumental timbres—the unmistakable sound of the oboe, for example—can be explained by the relationship between the fundamental and overtones, the harmonic spectrum is a reasonable, though primitive, starting point for explaining the characteristic nature of timbres. As the critical reception cited above demonstrates, Ligeti exploited timbre to memorable results in many of his sound-mass works. In some, such as the first movement of his *Doppelkonzert für Flöte, Oboe, und Orchester* (1972), timbre seems indeed to function as a structural device.

The *Doppelkonzert* opens with the solo alto flute subtly projecting through a soft, misty, cluster-laden background of flutes and clarinets. In this low register, the flute has a dark, rich, reedy sound because the lower overtones actually sound stronger than the fundamental, an inversion of the usual shape of a pitch's harmonic spectrum.[8] The alto flute melody rises slowly in pitch and the timbre likewise brightens slightly, aided by the introduction of bassoons and brass into the background cluster—technically speaking, the harmonic spectrum becomes more balanced, with the fundamental and overtones approximately equal in this register. Suddenly, this misty texture congeals and the solo oboe and celesta pierce through, sounding two octaves higher than the solo alto flute. In this very high register, the timbre of the solo oboe is nasal and bright. This is because the

[7] Perceptually speaking, the attack is also very important; Campbell and Greated, *The Musician's Guide*, 142-144.
[8] Campbell and Greated, *The Musician's Guide*, 288-289.

oboe's harmonic spectrum is rich in upper overtones[9]—a direct contrast with the flute's spectrum, which is rich in lower overtones. A complement of violins, playing in harmonics, and high winds produce a shimmering background that emphasizes the high, bright character of the oboe entrance.

The progression toward open octaves and fifths functions as the second structural articulation of the piece, since it ushers in the stark contrast of a much darker timbre once again, dominated by the clarinets playing *crescendo-decrescendo* waves. The pitch stays low, as bassoons, trombones, low strings and the solo alto flute are added to the texture in waves. More importantly, the timbre remains shadowy and dark. The solo oboe joins, gradually brightening the timbre as its melody climbs in register. By this point, it is fairly clear that register and timbre are linked—low registers are dominated by the mellow, open, dark timbres of clarinet, low brass, low strings, and solo alto flute; high registers are articulated in the nasal, bright timbres of high strings, high winds, and solo oboe.

As the oboe melody gradually climbs higher, the texture thins, leaving only the solo oboe and solo alto flute. Here Ligeti extends the dialectical interplay between the contrasting alto flute and oboe timbres. The two soloists alternate on the same or similar pitches, emphasizing the fluctuation between the open, mellow timbre of the flute, with its harmonic spectrum heavy in lower overtones, and the tight, nasal timbre of the oboe, with its harmonic spectrum emphasizing the upper overtones. The strings seamlessly take over and continue to build anticipation, climbing toward the final structural

[9] Campbell and Greated, *The Musician's Guide*, 274.

articulation of the piece when the solo oboe pierces through the texture once again, a full two octaves above the solo bass flute. After having its moment in the sun, so to speak, the oboe drops out of the texture entirely and the solo bass flute, backed by bass clarinets, low brass and low strings, guides the music back into the dark, mellow, shadowed mist from which it had emerged.

A number of factors suggest that this movement is primarily concerned with timbre. First, Ligeti's copious, detailed score notations suggest that he wanted to exploit very specific sounds; he notated special fingerings for the already unusual timbres of the solo alto and bass flutes, and he also incorporated extended wind techniques and microtone deviations that further modify the timbres of the solo flutes and oboe. Moreover, the structural arrivals of the piece are articulated timbrally—the solo oboe announces its presence by piercing through the texture with its bright timbre, reinforced by the equally bright, sharp celesta; the piercing open fifths and octaves give way to waves of much darker clarinets and low winds; the registral ascent toward the pinnacle of the piece is reinforced by a concomitant brightening of the timbre as the nasal oboe pierces through the texture once again. Finally, the piece's beginning and ending with similar mellow, misty, dark timbres produces a powerful structural arch, which signals to the listener that the piece has come full circle.

The association of register and timbre in this way throughout the movement depends on the establishment of a reliable binary opposition: low/mellow vs. high/bright. The opposition between these poles holds throughout the piece because the high pitch

used for the oboe entrances foregrounds its bright, nasal timbral character (due to the oboe's harmonic spectrum that is naturally weighted toward the high overtones). By coupling the lower registers with the mellow timbre of the alto flute, he likewise exploits the characteristic sound of the flute in its low register (due to the prominence of the lower overtones in its harmonic spectrum). Ligeti extends this dialectic to the orchestration of the supporting cast and the dramatic push-pull of unfolding events on a global level. Thus the structural architecture of the *Doppelkonzert* seems wedded to, even dependent upon, the timbral dialectics at play in the movement.

Lontano (1967) is commonly acknowledged as another of the works in Ligeti's *œuvre* that deeply engages with timbre. Marina Lobanova suggests that Ligeti was concerned with developing "*Klangfarbenkomposition* containing crystallizations of harmony."[10] *Lontano* fits into the same aesthetic sphere as both the *Doppelkonzert* and *Atmosphères* owing to their shared "continuous" texture, which allows timbre to supercede melody, harmony and rhythm as the main aesthetic interest. The *Cello Concerto* (1966), too, has been understood as a representative of the *Klangfarben* category. As Richard Steinitz says, "Ligeti builds up a montage of timbral and gestural effects… a true *Klangfarbenmelodie* that involves timbral changes alone without any alteration of pitch."[11]

[10] Marina Lobanova, *György Ligeti: Style, Ideas, Poetics,* trans. Mark Shuttleworth (Berlin: Ernst Kuhn, 2002), 149. See also Pierre Michel, *György Ligeti*, 2nd ed. (Paris: Minerve, 1995), 79; Nordwall, *György Ligeti*, 53; Steinitz, *György Ligeti*, 153; Toop, *György Ligeti*, 116.
[11] Steinitz, *György Ligeti*, 137.

As Steinitz's analysis suggests, Ligeti's exploitation of timbre in many of the 1960s sound-mass works provokes an association with the concept of *Klangfarbenmelodie*, developed by Arnold Schoenberg roughly fifty years before.[12] In the final pages of his *Harmonielehre* (1911), Schoenberg suggested that timbral succession may be conceived in a way similar to melody—that is, the otherwise "secondary" parameter of timbre (*Klangfarben*) could possess a logic and a form that would allow it to stand on its own like the "primary" parameter of melody.[13] Ever since Schoenberg coined the term, it has attracted fascination and confusion in equal measure. The relationship between timbre and pitch in Schoenberg's theory is problematic, to say the least.[14] Timbre seems in some ways inseparable from pitch, and at least is highly variable according to pitch—in fact, my analysis at the start of this chapter suggests that Ligeti exploited exactly this feature in establishing the binary dialectics in the first movement of the *Doppelkonzert*.

Furthermore, timbre is a much more subjective parameter than pitch since it is not measurable in the same discrete quantities as pitch. Thus, the process for giving structure to a "melody of timbres" remains ambiguous. Should the goal of a *Klangfarbenmelodie*

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[12] Kaufmann, "Strukturen im Strukturlosen," 397; Toop, *György Ligeti*, 76-77.
[13] Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley: University of California Press, 1978), 421-22. The passage also appears, along with other relevant historical sources, in Paul Mathews, ed., *Orchestration* (New York: Routledge, 2006), 155-56 and Alfred Cramer, "Schoenberg's *Klangfarbenmelodie*: A Principle of Early Atonal Harmony," *Music Theory Spectrum* 24/1 (Spring 2002): 3-4.
[14] Erich Doeflein, "Schoenberg's Op. 16 No. 3: der Mythos der Klangfarbenmelodie," and "Schoenberg's Op. 16 No. 3: Geschichte eine Überschrift," *Melos* 36/5 (May 1969): 203-05 and 209-11; Carl Dahlhaus, "Schoenberg's Orchestral Piece Op. 16 No. 3 and the Concept of Klangfarbenmelodie," *Schoenberg and the New Music*, trans. Puffett and Clayton (Cambridge: Cambridge University Press, 1987), 141-43; Adorno, "Funktion der Farbe in der Musik (1966)," *Darmstadt-Dokumente I*, 278, 284.

be to blend timbres seamlessly? Or perhaps it should focus on contrasting timbres as much as possible—but this leaves unanswered the question of how the greatest contrast between timbres is to be defined. In any case, a sequence of timbres lacks the underlying architecture of either the diatonic or twelve-tone systems, which create a discrete definition for each pitch and quantifiable relations between them. As Ligeti and many of his contemporaries' compositions and writings suggest, though, the confusion inherent in the concept of *Klangfarbenmelodie* did not dampen their enthusiasm for music that would elevate timbre from a secondary parameter to primary one. In this chapter I will examine how this enthusiasm translated into Ligeti's music. In particular, I will explore the ways in which Ligeti's *Lontano* and *Cello Concerto* were shaped by the Darmstadt composers' interpretations of the confusing, yet compelling idea of *Klangfarbenmelodie*.

Two Strands

Aside from the ambiguity inherent in the definition of *Klangfarbenmelodie*, much of the confusion over Schoenberg's meaning stems from the fact that critics, composers and musicologists have consistently understood Schoenberg's *Orchesterstück* Op. 16 No. 3 (1909)—for some time subtitled "Farben" (Colors)—to be his sole musical realization of *Klangfarbenmelodie*.[15] Theodor Adorno exemplifies this habit when he writes that:

> *Klangfarbenmelodie*, a concept introduced in Arnold Schoenberg's *Harmonielehre*, said that simple changes of timbre assume a quasi-melody-building function, that the change of timbre should itself become a musical event.

[15] For more on the changing titles for the piece, see Doflein, "Schoenberg's Opus 16 No. 3: Geschichte einer Überschrift," and Charles Burkhart, "Schoenberg's *Farben*: An Analysis of Op. 16 No. 3," *Perspectives of New Music* 12/1-2 (Fall 1973-Summer 1974): 141-43.

> An example of the principle is the orchestra piece "Farben" from Schoenberg's Op. 16, where the musical connections were made through the incessant changing instrumentation of a certain chord.[16]

In contrast to the linear, melodic focus implied by the term *Klangfarbenmelodie* itself, Op. 16 No. 3 explores timbral variation through varied instrumentation of a single five-note chord and its transpositions. That Schoenberg's musical experiment with *Klangfarbenmelodie* seems to be in fact something more akin to *Klangfarbenharmonie* or *Klangfarbenakkord* has added confusion to an already complicated and insufficiently defined term.[17] The intellectual history for the term has mirrored the confusion inherent in Schoenberg's definition. On the one hand, Schoenberg's experiment of changing timbres for the same chord seemed to suggest that *Klangfarbenmelodie* could be applied to the vertical dimension and could perhaps be theorized as a method for connecting sonorities in ways other than through voice leading and harmonic rules. On the other hand, writers also recognized that an alternative interpretation of *Klangfarbenmelodie* could be found in Webern's music.[18]

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[16] Theodor W. Adorno, "Neunzehn Beiträge über neue Musik," *Musik Schriften V, Gesammelte Schriften XVII*, (Frankfurt am Mainz, 1984), 59. Cited in Rainer Schmusch, "Klangfarbenmelodie," *Terminologie der Musik im 20. Jahrhundert*, ed. H. H. Eggebrecht (Stuttgart: F. Steiner, 1995), 227.
"*Klangfarbenmelodie*, in Arnold Schönbergs Harmonielehre eingeführter Begriff, der besagt, dass bloße Veränderung der Klangfarbe gleichsam melodiebildende Funktionen übernehmen, dass der Wechsel von Farben von sich aus musikalisches Ereignis werden soll. Ein Beispiel des Prinzips ist das Orchesterstück "Farben" aus Schönbergs Op. 16, wo der musikalische Zusammenhang durch die unablässig wechselnde Instrumentation eines bestimmten Akkordkomplexes hergestellt wird."

[17] Alfred Cramer suggests that Schoenberg indeed had a more harmonic realization of the concept in mind. "Schoenberg's *Klangfarbenmelodie*," 1-7.

[18] György Ligeti gives much emphasis to Webern's contributions to *Klangfarbenmelodie*, though he suggests that they grew in part from Schoenberg's ideas. See "Weberns Klangfarbentechnik," *Gesammelte Schriften* I, 332.

As is well known, Webern was important to the Darmstadt circle of composers in the post-war years. In particular, his musical application of *Klangfarbenmelodie* exerted considerable influence over the evolution and practice of the concept amongst the post-war avant-garde. For example, Messiaen, who was in many ways an intellectual father of the younger Darmstadt generation, held the position that "It was Webern who had taken the notion of *Klangfarbenmelodie* only advocated by Schoenberg, and actually realized it."[19] Adorno regarded the melodic nature of Webern's *Klangfarbenmelodie* passages to be a true innovation:

> In his short forms, Webern certainly is rewarded by virtue of his *Klangfarbenmelodien* like no other […] Several melodies are implemented in perfect color changes, where different bonds are merged together in changing shades to an unbroken continuum, which becomes equivalent to the melodic fiber.[20]

Many have considered Webern's orchestration of the *Ricercar* from J. S. Bach's *Musical Offering* (1935) to be a clear example of Webern's melodic interpretation of *Klangfarbenmelodie*. Webern divides Bach's fugue subject into seven sections between various instruments; for the Darmstadt composers, this demonstrated a new way of thinking about *Klangfarbenmelodie*.

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[19] Claude Samuel, *Conversations with Olivier Messiaen*, trans. Felix Aprahamian (London: Stainer & Bell, 1976), 25. Quoted in Jonathan Bernard, "The Legacy of the Second Viennese School," *Schoenberg, Berg, and Webern*, ed. Bryan Simms (Westport, CT: Greenwood, 1999), 324.

[20] Adorno, "Funktion der Farbe in der Musik (1966)," *Darmstadt-Dokumente I*, 298. "In seinen Kurzformen freilich wird Webern belohnt durch Klangfarbenmelodien wie kein anderer […]. Einzelne Melodien werden in vollkommenen Farbwechsel umgesetzt, während die wechselnden Valeurs zu einem in sich schattierten, aber bruchlosen Kontinuum sich aneinanderreihen, das dem melodischen Faden entspricht."

Webern's single published statement on the subject suggests that indeed he did consider the melodic application of *Klangfarbenmelodie* to be valid and useful in his orchestration of Bach's *Ricercar*:

> The original [J. S. Bach *Ricercar*] [is] purely abstractly notated (like the subsequent fugue in the *Kunst der Fuge*). It is not clear if it should be sung or played, nor whether it should go quick or slow (i.e. it is without tempo markings), nor whether the dynamic markings are thus loud or quiet; in short there is nothing of what one otherwise adds on to indicate how the ideas should be understood or performed. Now I have dismantled these abstractions in a *Klangfarbenmelodie*.[21]

Martin Zenck has seconded this idea, arguing that Webern's orchestration was remarkable because "Bach's composition was to be freed for the first time in its history from an abstract, purely ideal presentation."[22] The Darmstadt composers agreed that Webern's orchestration of Bach was remarkable, though they tended to focus on the way Webern had introduced a structural rather than ornamental use of *Klangfarbenmelodie*.

As the foregoing suggests, the intellectual history of the term *Klangfarbenmelodie* has been bifurcated almost since its inception, pitting Schoenberg's vertical, chordal application of the timbre principle against Webern's melodic application of the concept.[23]

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[21] Anton Webern, letter to Fr. Rederer, May 16, 1935. Quoted in Schmusch, "Klangfarbenmdlodie," 228 and Martin Zenck, "Tradition as Authority and Provocation: Anton Webern's Confrontation with Johann Sebastian Bach," *Bach-Studies*, ed. D. Franklin (Cambridge: Cambridge University Press, 1989), 312. Translation adapted from Zenck, 314. "Im Original [ist] [J. S. Bach Ricercar] rein abstrakt notiert (wie dann später die Fugen in der "Kunst der Fuge"). Da steht nicht, ob das zu singen oder zu spielen ist, nicht ob's schnell oder langsam sein soll (d. h. ohne Tempobezeichnung), nichts von dynamischer Bezeichnung also ob laut oder leise, kurz nichts von dem, was man sonst hinzufügt, um anzudeuten, wie man die Gedanken verstehn soll oder aufzuführen hätte. Nun habe ich dieses abstractum in eine "Klangfarbenmelodie" aufgelöst."

[22] Martin Zenck, "Tradition as Authority," 310.

[23] My understanding of this history is indebted to Rainer Schmusch's "Klangfarbenmelodie," 221-234. See also Cramer, "Schoenberg's *Klangfarbenmelodie*," 1-7; Cramer argues that the melodic instantiation of the concept, which I attribute to Webern's music, has become the commonplace understanding of

There seems to have been little agreement even between Schoenberg and Webern over the musical implications of the concept of *Klangfarbenmelodie*. As the two interpretations circulated, apparently confusion emerged over who had first realized *Klangfarbenmelodie*. Schoenberg tried to set the record straight in 1951:

> Dorian-Deutsch studied with Webern, and recently when he visited me, he told how Webern was the first to write *Klangfarbenmelodien*, and that I then used this at the end of the *Harmonielehre*. Anyone who knows me at all knows this is not true […] Particularly, anyone can see that I had thought of progressions of tone-colours equaling harmonic progressions in terms of inner logic. These I called melodies, because, like melodies, they would need to be given form, and to the same extent—but according to laws of their own, in keeping with their nature.[24]

Not willing to allow Webern's rather more intuitive, transparent melodic interpretation of *Klangfarbenmelodie* to stand as the only one, Schoenberg also wrote in a letter to Dallapiccola:

> Webern's compositions fulfilled my conception of *Klangfarbenmelodien* only in the slightest way. This is because I understood chords, and—above all—melody, in a different way.[25]

The disagreement about who was first to realize the idea of *Klangfarbenmelodie* foreshadowed the increasing preference for Webern's works in the post-1945 era amongst the Darmstadt composers. As Rainer Schmusch suggests, however, both the Schoenbergian and Webernian musical interpretations of *Klangfarbenmelodie* remained

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Klangfarbenmelodie, despite the fact that this is probably not what Schoenberg was proposing in the *Harmonielehre*.

[24] Arnold Schoenberg, "Anton Webern: Klangfarbenmelodie (1951)," *Style and Idea*, trans. Leo Black (New York: St. Martins, 1975), 484-85. Quoted in German in Schmusch, "Klangfarbenmelodie," 229.

[25] Schmusch, "Klangfarbenmelodie," 229. Translated slightly differently into English in Cramer, "Schoenberg's *Klangfarbenmelodie*," 4. "Meine Vorstellung von Klangfarbenmelodien wäre durch Weberns Kompositionen nur zum geringsten Teil erfüllt. Denn ich meinte etwas anderes unter Klängen, und vor allem aber, unter Melodie."

important well into the post-1945 era: "Most authors employ the term *Klangfarbenmelodie* in its double significance, however: timbral changes of the same chord and timbral changes in a melodic sequence."[26]

Ligeti both received and propagated this bifurcated historical narrative. In the article "Komposition mit Klangfarben (1965)," drawn from his lectures at the Darmstadt *Ferienkurse* in 1962 and 1964 on the topic, he traces the development of *Klangfarbenmelodie* along two distinct lines:

> Therefore there are two ways in which timbre can function in a music work. On the one hand the form can be structured through contrasting instrumental colors, in which the different structural elements stand out against one another and therefore the formal plan is perceived as plastic. On the other hand, timbre can appear as coalescing: originally heterogeneous sonic elements merge into a higher, embracing entity, and gradual timbre changes, gradual timbre mixtures build the foundation of the musical formal events.[27]

Ligeti's notes for the 1962 *Ferienkurse* seminar show a similar conceptual structure fleshed out with many musical examples.[28] Figure 4.1 condenses most of Ligeti's musical examples from the 1965 article into the two strands under discussion.

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[26] Schmusch, "Klangfarbenmelodie," 230. "Die meisten Autoren gebrauchen den Terminus Klangfarbenmelodie jedoch in der doppelten Bedeutung von Klangfarbenwechsel identischer Klänge und Klangfarbenwechsel melodischer Tonfolgen."

[27] Ligeti, "Komposition mit Klangfarben," *Gesammelte Schriften* I, 158. The article is a condensation of the 1962 seminar "Die Komposition mit Klangfarben," and the 1964 seminar "Klangtechnik und Form." "Daraus geht hervor, dass die Klangfarbe in einem musikalischen Werk zweierlei Funktionen erfüllen kann. Einerseits kann sie die Form gliedern durch kontrastierende Instrumentalfarben, die die verschiedenen Strukturelemente voneinander abheben und so den Formablauf für unsere Wahrnehmung plastisch gestalten. Anderseits kann die Klangfarbe verschmelzend wirken: Ursprünglich heterogene klangliche Elemente gehen dann in einer höheren, umfassenden Einheit auf, und graduelle Farbveränderungen, graduelle Farbmischungen bilden die Grundlage des musikalischen Formgeschehens."

[28] The lecture notes are held in the György Ligeti Collection at the Paul Sacher Foundation and titled "Klangfarben Komposition."

Webernian *Klangfarbenmelodie*: (melodic, structural, "plastic")	Schoenbergian *Klangfarbenmelodie*: (coalescing, higher entity mixtures)
Baroque terraced dynamics → Mannheim school Haydn, String Quartet Op. 33 No. 3 Schubert, String Quartet in C Major	
Berlioz, *Symphonie fantastique*, IV. programmatic "pictorial" elements	Berlioz, *Symphonie fantastique*, V. atmospheric "*misé en scene*" elements
Wagner, *Parsifal* Mahler, Sixth Symphony and *Das Lied von der Erde* late Romantic programmatic effects	Wagner, *Lohengrin* Mahler, First, Fourth and Fifth Symphonies Strauss, *Eine Alpensymphonie* spatial effects; static layers and structures
Schoenberg, *Erwartung* character contrast established by orchestration	Debussy, *Ibéria* from *Images II* sonic layers
Webern, *Fünf Stücke für Orchester* Op. 10 and *Variationen für Orchester* Op. 30	Schoenberg, *Fünf Orchesterstücke*, Op. 16 No. 3 "Farben"
Boulez, *Le Marteau sans maître*	Stockhausen, *Gruppen*

Figure 4.1: Ligeti's musical examples from "Komposition mit Klangfarben (1965)" as representative of dual Webern/Schoenberg lineages

Ligeti presented *Klangfarbenmelodie* as comprised of these two strands in his teaching as well. In his composition courses in Stockholm in 1961-63, Ligeti reports that he led his students in analytical exercises that reinforced the distinction between *Komposition mit Klangfarben* (composition *with* timbre) and *Komposition der Klangfarben* (composition *of* timbre).[29] As representative of compositions *with* timbre, he analyzed Webern's Op. 6, 10 and 29, showing how timbral details emphasized the

[29] Ligeti, "Eine Neue Wege im Kompositionsunterricht," *Gesammelte Schriften* I, 131-56.

structure of the atonal melodies and twelve-tone rows. Composition *of* timbre, conversely, involved pieces with several co-mingled timbres, such as Schoenberg's Op. 16 No. 3. Ligeti adds a third strand to the familiar Webern/Schoenberg bifurcation saying, "A further complement to this issue is gained through analysis of the possibilities of *Klangfarbenkomposition* in electronic music."[30]

Given his extensive teaching and writing on the subject of *Klangfarbenmelodie*, it is clear that Ligeti was not simply a passive recipient of the discourses surrounding the topic but also shaped those discourses.[31] Yet it is significant that Ligeti's presentation of the intellectual history surrounding *Klangfarbenmelodie* closely parallels the Schoenberg/Webern bifurcation that characterized term's reception history and that shaped the Darmstadt composers' collective understanding of the term. Ligeti absorbed the prevailing discourses surrounding both the Webernian and Schoenbergian styles of *Klangfarbenmelodie* and both strands are reflected into his own compositional use of timbre. Schoenbergian *Klangfarbenmelodie* is critical for the sound-mass works, and is particularly relevant in *Lontano* (1967). Webernian *Klangfarbenmelodie*, on the other hand, appears in *Aventures* (1962) and *Nouvelles aventures* (1962-65) and the *Cello Concerto* (1966). Ligeti's engagement with these two intertwined musical histories, especially as a complement to his experiences in the electronic music studio, informed his compositional explorations of timbre.

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[30] Ligeti, "Eine Neue Wege," 136. "Eine weitere Vervollständigung dieses Problemkreises bildete die Analyse der Möglichkeiten der Klangfarbenkomposition in der elektronischen Musik."
[31] See also Christoph von Blumröder, "Ein weitverzweigtes Spinnennetz: Ligeti über Webern," *György Ligeti: Personalstil—Avantgardismus—Popularitat*, ed. Otto Kolleritsch (Vienna: Universal Edition, 1987), 27-43.

Schoenbergian *Klangfarbenmelodie*

When Schoenberg invented the idea of *Klangfarbenmelodie*, he apparently had in mind a timbral phenomenon that exceeded the scope of traditionally defined melody and harmony, as the letter to Dallapiccola quoted earlier suggests. In laying out the theory in his *Harmonielehre* Schoenberg states that, "I think the tone becomes perceptible by virtue of tone color, of which one dimension is pitch. Tone color is, thus, the main topic, pitch a subdivision."[32] Schoenberg hypothesizes that a musical logic could be discerned for tone color that would function similarly to the rules for harmonic progression or melodic succession: "[…] It must also be possible to make such progressions out of the tone colors […] progressions whose relations with one another work with a kind of logic entirely equivalent to that logic which satisfies us in the melody of pitches."[33] Giving form and musical logic to such an abstract parameter as timbre, while at the same time minimizing the role of pitch, as Schoenberg acknowledges, is no simple task: "That has the appearance of a futuristic fantasy and is probably just that."[34] Despite the admitted difficulties, Schoenberg's concept of *Klangfarbenmelodie* was embraced enthusiastically amongst the Darmstadt circle. Realizing *Klangfarbenmelodie* meant moving beyond harmony and melody, a goal that held with remarkably little variation from Schoenberg to Boulez and Ligeti. As Ligeti says:

> Timbre especially has achieved a function that is at least equal to that of melody, harmony and rhythm. In some compositions of the last few years timbre actually assumes the main role and it alone becomes decisive for the structure and

[32] Schoenberg, *Harmonielehre*, trans. Roy E. Carter, 421.
[33] Ibid.
[34] Ibid.

> organization of the form, so that in these works the earlier main areas—melody, harmony and rhythm—not only lose their function, but disintegrate into nothing, so to speak.[35]

In the post-war years, proponents of electronic and acoustic music alike cited possible musical appearances of *Klangfarbenmelodie* as potentially revolutionary developments.

Since Schoenberg's orchestra piece Op. 16 No. 3 was commonly treated, in Darmstadt and elsewhere, as the sole musical incarnation of *Klangfarbenmelodie* in his *œuvre*, writers tended to collapse their evaluations of Schoenberg's ideas about *Klangfarbenmelodie* together with an analysis of that piece. That is to say, if the definition and particulars of Schoenberg's concept of *Klangfarbenmelodie* were intriguing but vague, Op. 16 No. 3 provided a direction—an object—that could receive more concrete formulations through musical analysis. Boulez focuses his energy here:

> The opening of this piece [Op. 16 No. 3] consists of a five-tone chord whose color is constantly renewed through a system of dissolves, and the ambiguity of timbre is moreover functional, since it acts as a medium for the overall structure: so for the first time we see timbre being used properly for its own sake, functionally, and not simply as a result of the instrumentation.[36]

Boulez's analysis expresses two ideas. The first is that Schoenberg uses tone color in Op. 16 No. 3 in a way that transcends or exceeds the coloristic or programmatic use of timbre and instrumentation, as seen in the late Romantic works of Mahler, Wagner and Strauss.

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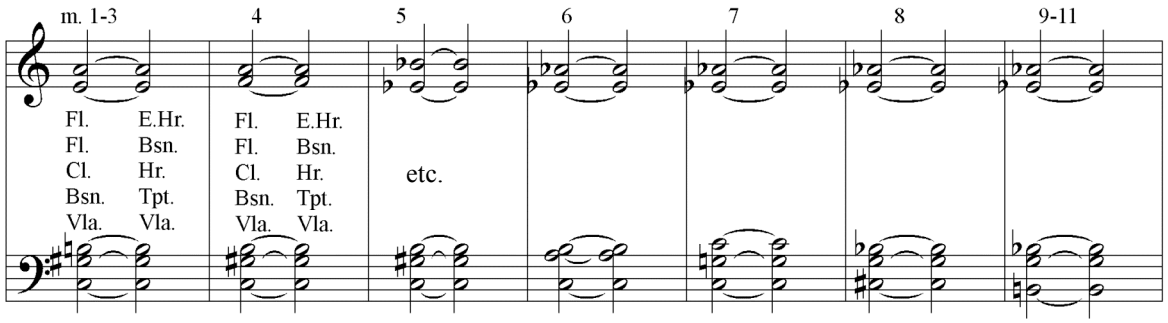
[35] Ligeti, "Komposition mit Klangfarben," *Gesammelte Schriften* I, 157. "Vornehmlich die Klangfarbe hat eine Funktion erhalten, die denen von Melodik, Harmonik und Rhythmik zumindest ebenbürtig ist. In einigen Kompositionen der letzen Jahre übernahm die Klangfarbe sogar die Hauptrolle und wurde allein maßgeblich für Struktur und Gliederung der Form, so dass in diesen Werken die früheren Hauptbereiche—Melodik, Harmonik und Rhythmik—nicht nur ihre Funktion verloren, sondern sich sozusagen in nichts auflösten."

[36] Pierre Boulez, "Schoenberg: Items for a Musical Encyclopaedia," *Stocktakings from an Apprenticeship*, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 282.

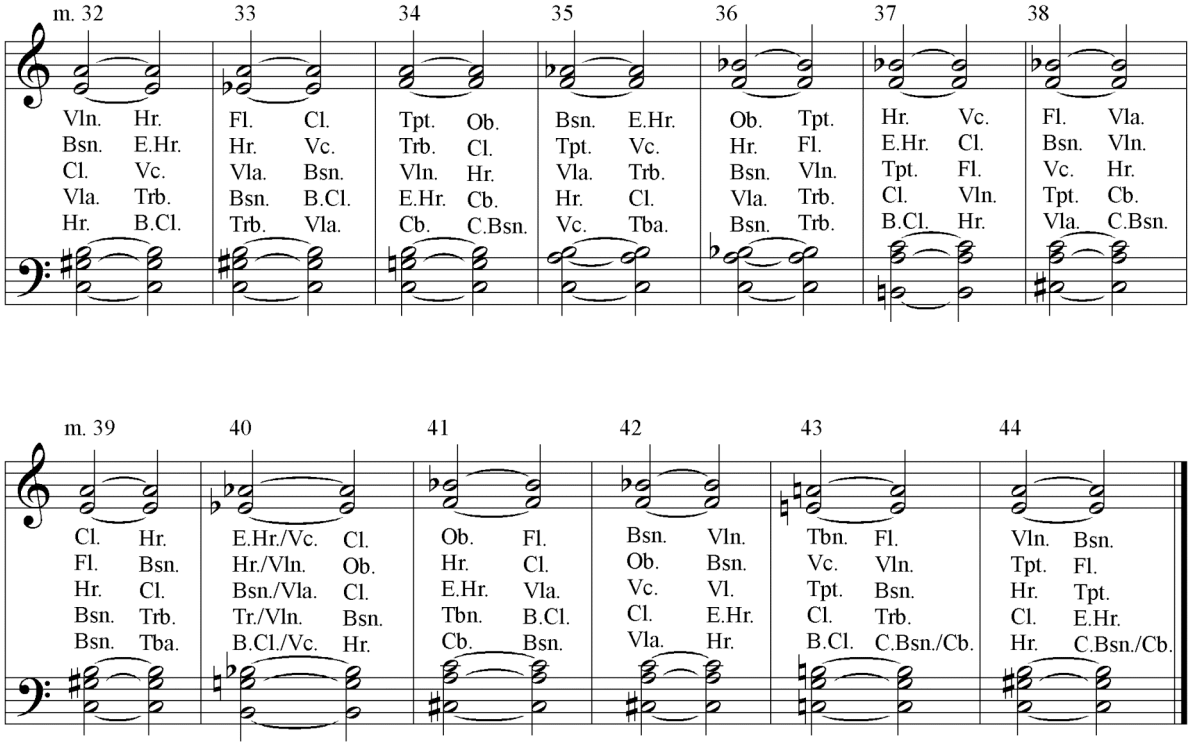
Secondly, and in agreement with contemporaneous Darmstadt theories of timbre, Boulez claims that the timbral alternations perform a structural function. This idea that the timbral alternations "structure" or provide a foundation for the work implies that melody, harmony and counterpoint are no longer the primary vehicles for these functions.

Op. 16 No. 3 opens, as Boulez noted, with a five-note chord that is varied in terms of its timbre.[37] As Example 4.2 shows, the chord's instrumentation is changed every two beats, though only two groupings of five instruments alternate in these first eleven measures (group 1 consists of two flutes, clarinet, bassoon, and viola; group 2 consists of English horn, bassoon, horn, trumpet and viola). Despite the changing instrumentation, the new group's articulations overlap the previous group's held tones, so that the sound remains continuous. In measure 12, the homogenous texture of the "changing chord" gives way to a more active, heterogeneous, ornamented B section; true to the ternary formal scheme, the original five-note chord returns in m. 32 and variations upon it close the work. As Example 4.3 shows, the timbral alternations in the A' section are more multifarious than in the opening of the work. Every half note, a new five-instrument group introduces a different composite timbre, which produces much more variety than the predictable alternation of two mixtures that opened the work.[38]

[37] See also the analyses by Peter Förtig, "Analyse der Opus 16 No. 3," *Melos* 36/5 (May 1969): 206-09 and Burkhart, " Schoenberg's Farben," 141-72.
[38] Förtig lays out these alternations on p. 208 as does Burkhart on p. 160.



Example 4.2: Schoenberg, Op. 16 No. 3, mm. 1-11



Example 4.3: Schoenberg, Op. 16 No. 3, mm. 32-44

The effect of the chordal A and A' sections reduced in Examples 4.2 and 4.3 is to focus the listener's attention on the subtle changes in timbre as the chord variations are repeated. In fact, the timbral variations appeared so salient that many writers claimed that there was no harmonic change whatsoever.[39] For example, H. H. Stuckenschmidt writes that:

> Schoenberg provided an experiment [Op. 16 No. 3], which seeks to make timbre the exclusive bearer of the musical form. A chord appears unchanged, but in ever new instrumentation, and provides the acoustic equivalent of an object that is cast in a flood of color-changing light.[40]

Stuckenschmidt supplies a vivid metaphor for the aesthetic effect of the timbral changes, but he is mistaken in suggesting that the chord literally does not change except for in instrumentation. In fact, as Example 4.4 shows, a simple, repeated voice-leading pattern lies underneath the timbral alternations. In the first eleven measures of the piece, each voice plays the three-note motivic shape of rising minor second, falling major second.[41] The return to the changing chord texture in m. 32 is accompanied by the same voice-leading structure now inverted. The last five measures of the piece repeat the inverted voice-leading pattern. The three-note motive, which guides and structures the chord's metamorphoses behind the scenes, as it were, calls into question not only Stuckenschmidt's description but also Boulez's assertion that "timbre assumes the

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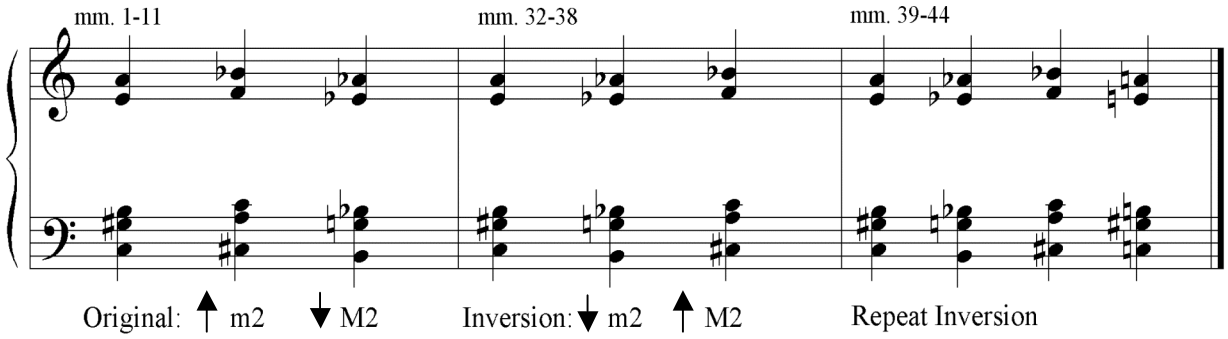
[39] For example, see Boulez's comments in "Schoenberg," *Stocktakings*, 282.

[40] H. H. Stuckenschmidt, *Neue Musik* (Berlin, 1951), 73; quoted in Schmusch "Klangfarbenmelodie," 230. "Bei Schönberg…gab es ein Experiment [Op. 16 No. 3], das die Klangfarbe zum alleinigen Träger einer musikalischen Form zu machen sucht. Ein Akkord erscheint unverändert, aber in immer neuer Instrumentation, und bietet das akustische Ebenbild eines Gegenstandes, über den ein Scheinwerfer farbig wechselndes Licht gießt."

[41] This three-note motive is discussed in Förtig, "Analyse des Opus 16 No. 3"; see also Burkhart, "Schoenberg's *Farben*," esp. 143-48.

structure of the work."[42] The aurally prominent timbral alternations are in fact laid on top of a systematic voice-leading structure, though the voice-leading and pitch changes are somewhat obscured by rhythmic staggering (refer back to Examples 4.2 and 4.3).



Example 4.4: Schoenberg, Op. 16 No. 3, voice-leading reduction of "changing chord"

If Boulez and the other Darmstadt composers often suggested that the timbral changes of the Op. 16 No. 3 chord took place outside of the traditional melody-harmony-counterpoint framework of music, Adorno realized that counterpoint was indispensable to Schoenberg's experiment. He says:

> Even the most recent achievement of traditional music, the emancipation of timbre, can only be realized where simultaneous voices are able to unfold freely in tonal space. But this needs counterpoint, even though the fact that counterpoint is tied to a tonal, harmonic system may give it an ornamental appearance.[43]

[42] Boulez, "Schoenberg," *Stocktakings*, 282.
[43] Adorno, "The Function of Counterpoint in New Music," *Sound Figures*, trans. Rodney Livingstone (Stanford: Stanford University Press, 1999), 129.

In Op. 16 No. 3, the same three-note motive shape is used in each voice in transposition, so the counterpoint is essentially canonic. Schoenberg used the automation of a canonic pattern to replace the contrapuntal or harmonic logic that usually governs voice-leading. This background canon, far from being just a machine-like process however, provides an important structural foundation for the "changing chord" sections—the slow, almost imperceptible counterpoint and subtle pitch changes are like a canvas against which the timbral changes can take the main aesthetic interest of the composition.

Though Ligeti does not seem to have named Schoenberg's Op. 16 No. 3 as a direct inspiration for *Lontano*, their pairing is nevertheless mutually illuminating.[44] The two pieces share many aesthetic similarities, due to the (partial) elimination of perceptible melody, harmony and rhythm in the traditional sense, though this is truer for *Lontano* than for Op. 16 No. 3. In terms of underlying structure, Ligeti's *Lontano* shows striking similarities to Schoenberg's piece. Specifically, *Lontano* is constructed entirely out of three canons, connected by two transitional sections. Example 4.5 shows the canonic melodies of the piece in reduction.[45]

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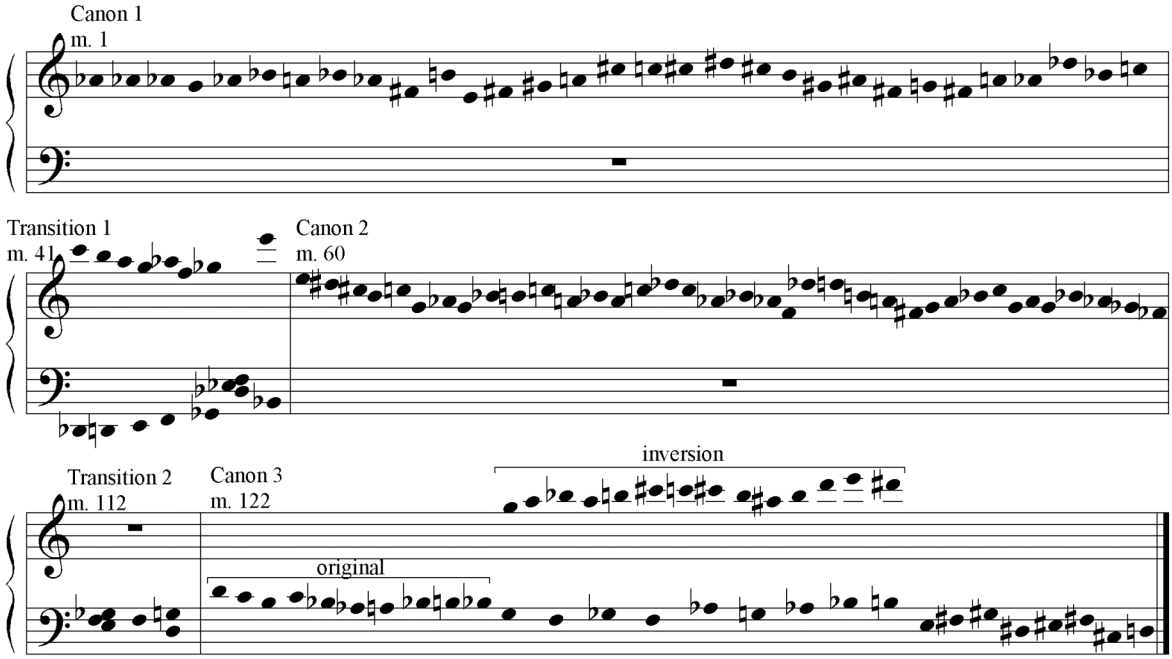
[44] Scholars often comment on the historical connectedness of *Lontano*: Marina Lobanova notices an "imaginary historical dimension" in *Lontano* based on musical allusions to Bruckner, Mahler, Debussy, Schumann and Berlioz and the etymology of the word "lontano" (distance) itself (*György Ligeti*, 155); Richard Toop touches on the Romantic allusion issue (*György Ligeti*, 118); Amy Bauer traces musical allusions to Bruckner, Mahler and Debussy in *Compositional Process and Parody in the Music of György Ligeti* (Ph.D. Diss., Yale University), 339-362. Thomas Schäfer argues that historical space, created through musical references, is particularly relevant to the poetics of *Lontano*; *Modellfall Mahler: Kompositorische Rezeption in Zeitgenössischer Musik* (Munich: Wilhelm Fink, 1999), 228-244.

[45] For analyses of this piece, see Steinitz, *György Ligeti*, 152-61; Bauer, *Compositional Process and Parody*, 131-74; Jane Piper Clendenning, *Contrapuntal Techniques in the Music of György Ligeti* (Ph.D. Diss., Yale University, 1989), 46-152; Robert Year Rollin, "Ligeti's Lontano: Traditional Canonic Technique in a New Guise," *Music Review* 41/4 (1980): 289-96; Bruce Reprich, "Transformation of Color and Density in György Ligeti's Lontano," *Perspectives of New Music* 16/2 (Spring-Summer 1978): 167-80.



Example 4.5: *Lontano*, pitch structure of canons and transitions

That Ligeti builds *Lontano* entirely out of canons refers back to Schoenberg's canonic voice-leading motives from Op. 16 No. 3—like Schoenberg, Ligeti uses the melodic canons to build essentially harmonic structures. Here too, Ligeti uses complex rhythmic displacements to ensure that the canons are perceived not as melodic entities but instead contribute to the sound-mass. The effect is to build a homogenous, vertical sonority from repetitions of the same voice-leading, just as Schoenberg did in Op. 16 No. 3; the difference, of course, is that Ligeti's canons are all offset at the unison rather than in transposition. Furthermore we can note that Ligeti also uses inversion prominently in

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As Steinitz, Bauer and Clendenning note, the three canons of *Lontano* are transpositions of the canon melodies from *Lux aeterna* (1966).

the third canon, which is very much like Schoenberg's use of the inverted motive shape in the third section (A') of Op. 16 No. 3. The original third canon melody and its inversion are featured quite prominently in the texture of *Lontano* (mm. 122-137), as the canon melody is stated somewhat nearer to unison than in other sections, with thick doublings for each entrance, and with nearly the whole ensemble abandoning the original melody and playing the inversion in m. 127. Thus it is possible to interpret this blatant pairing of original-inversion shapes in *Lontano* as a deliberate *homage* to Schoenberg—if not to Op. 16 No. 3 directly, perhaps to the basic twelve-tone techniques he discovered.

Analytical interest in *Lontano* seems to consistently center around the paradox of how a single canonic melody can be woven into such a dense texture and even more, how a canon melody can imply harmonies.[46] As Ligeti himself has said, the central paradox of the work is that "Polyphony is written, but harmony is heard."[47] Richard Steinitz suggests that this achievement is unprecedented: "*Lontano* is an extraordinarily far-reaching product of canonic technique. The idea of turning a single line into a sonic aurora appears to be unique."[48] If we can agree with Steinitz that *Lontano* is indeed an extraordinarily thorough engagement with canonic technique, it is harder to agree that *Lontano*'s conversion of polyphony into harmony is unique. In fact, Adorno brought up

[46] Jonathan Bernard takes up this question in "Inaudible Structures, Audible Music: Ligeti's Problem and His Solution," *Music Analysis* 6/3 (1987): 207-36 and "Voice-Leading as Spatial Function in the Music of Ligeti," *Music Analysis* 13/2-3 (1994): 227-53. Lobanova has much to say about paradoxes in Ligeti's aesthetics in her monograph. This question also forms the basis of the analysis in Rollin's "Ligeti's *Lontano*" and Reprich's "Transformation of Color and Density in Ligeti's *Lontano*."
[47] Ligeti, "Lontano," *Gesammelte Schriften* II, 245. Joseph Häusler paraphrases Ligeti's comments in *Ligeti in Conversation*, 100. Also quoted in Steinitz, *György Ligeti*, 159. "Geschrieben ist die Polyphony, zu hören die Harmonik."
[48] Steinitz, *György Ligeti*, 160.

exactly this point in *Philosophie der neuen Musik* in his assessment of Schoenberg's contributions:

> Schoenberg finally arrested the principle of polyphony as no longer heteronomous to an emancipated harmony, but as, instead, a principle at every point awaiting reconciliation with it. He revealed polyphony as the essence of harmony itself.[49]

Ligeti's *Lontano* paradox, "Polyphony is written, but harmony is heard," has much historical resonance when viewed in the context of Adorno's idea that counterpoint remained the structural underpinnings of even twentieth-century harmony. In *Lontano*, as in Schoenberg's Op. 16 No. 3, counterpoint and harmony are revealed as mutually interdependent. Ligeti may have learned from Adorno's Schoenberg analyses that counterpoint, melody and harmony need not be obliterated completely; instead, one need only turn these "traditional" parameters into the structural background to allow new experiments with *Klangfarbenmelodie* to come forward.[50] Ligeti certainly pushes canonic technique further than his predecessors to remarkable results in *Lontano*, primarily because the impression of harmony emerges from a single, mostly stepwise canonic melody. How does Ligeti so strongly imply harmony without using *transposed* melodies in canon, as Schoenberg does, which provide a number of different pitches?

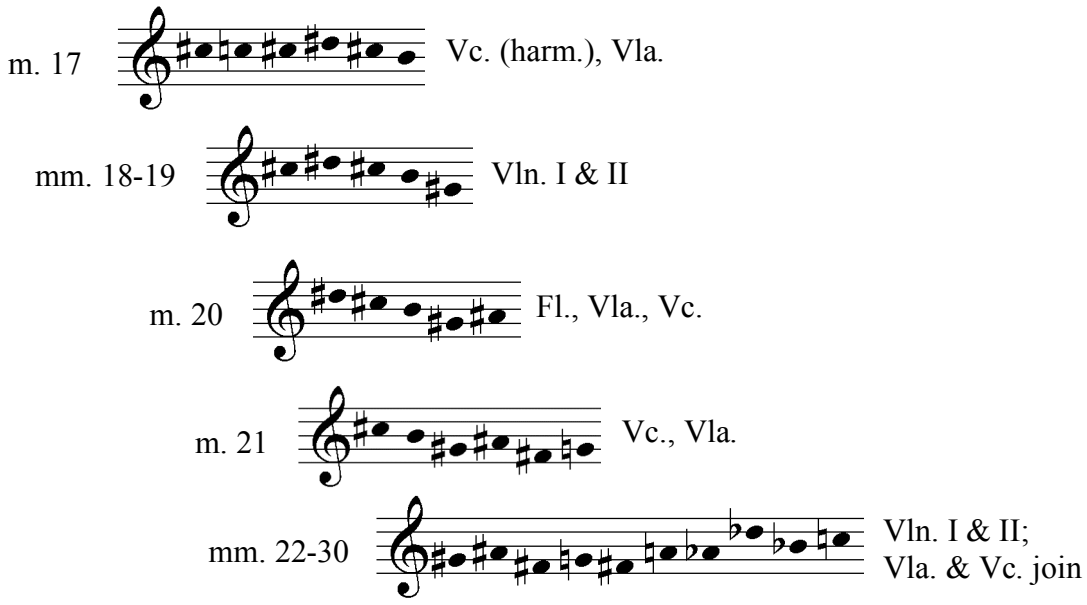
The answer lies partially in the fact that Ligeti rhythmically staggers the entrances so that neighboring portions of the canon melodies inevitably combine. Since the canonic melodies are often composed of seconds (either major or minor), this means that the resulting "harmonies" are often clusters of seconds and thirds that emerge and

[49] Adorno, *Philosophy of New Music*, 48.
[50] See Adorno's remarks to this effect in his 1966 Darmstadt lectures "Funktion der Farbe in der Musik," 265-266.

dissolve rather quickly, as the canon melodies pass by one another according to Ligeti's characteristically irregular rhythmic offsets. But there are two points in the piece where prominent harmonies arise as a result of deliberate repetition of particular segments of the canon melody rather than mere coincidence of the canonic lines. In these moments, the progression of the canon is temporarily suspended as the music dwells on a particular pitch collection. The effect is the crystallization of particular harmonies—in the first instance, a vaguely G-sharp minor inflected cluster (shown in Example 4.6) and in the second instance, an unmistakable whole-tone cluster (shown in Example 4.7).

Canon 1 is introduced in four or five note segments until measures 17-30 where it is introduced virtually note-by-note. As Example 4.6 shows, each new instrumental group introduces the canon segment by repeating the earlier statement minus the first tone or two, while adding a tone or two at the end.[51] With so many gratuitous repetitions of similar segments of the canonic melody, it is clear that Ligeti was aiming for a particular harmony—here, a chromatically-inflected G-sharp minor—to emerge from the fabric.[52]

[51] Rollin refers to this as "canonic metamorphosis." "Ligeti's *Lontano*," 295.
[52] Though Example 7 lacks rhythmic detail, it is important to note that each canon segment is introduced in either 4 or 8 rhythmically staggered voices. This sort of rhythmic staggering throughout individual instrumental players is characteristic of Ligeti's compositional procedure throughout *Lontano*; even canon segments that do not dwell on a particular pitch collection are played in rhythmically-staggered individual voices.

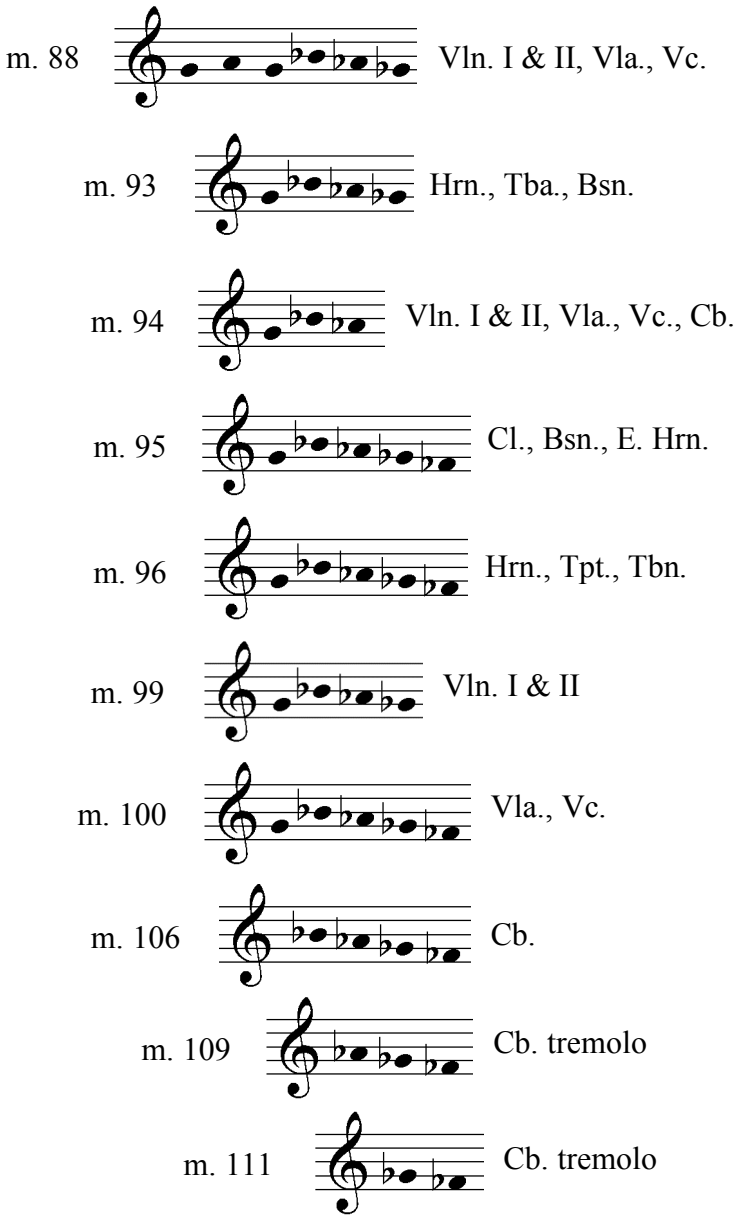


Example 4.6: *Lontano* mm. 17-30, repetition of canonic segments in varying instrumental groups

This deliberate emergence of a particular harmony is even more apparent in the "whole tone" section, where a similar process of repetition shrinks rather than expands the canonic melody (see Example 4.7). Many analysts have interpreted this section as performing a specific structural function, suggesting as Amy Bauer does, that the repetitions at the end of Canon 2 bring the work "to a virtual standstill before the final section's summation."[53] Putting the canonic melody on repeat, as it were, ensures that the harmony appears momentarily suspended. But more importantly, the harmonic stasis

[53] Bauer, *Compositional Process and Parody*, 137; see also Clendenning, *Contrapuntal Techniques*, 110-11 and Rollin, "Ligeti's *Lontano*," 296.

represented in Examples 4.6 and 4.7 provides a steady background against which the timbral metamorphosis can occupy the foreground.



Example 4.7: *Lontano* mm. 88-111, repetition of canonic segments in varying instrumental groups

The above examples show that each statement of the canon melody, though containing many pitches repeated from the previous statement, is introduced in a different instrumental group. This alternation is most striking in Example 4.7: strings, brass, strings, winds, and so forth. In place of the constant timbral and harmonic metamorphosis that characterizes most of *Lontano*, Ligeti has suspended the canonic (i.e., harmonic) progression so as to allow the listener to focus intently on the timbral transformations. In terms of effect, this technique bears striking similarity to Schoenberg's Op. 16 No. 3, where the seamless, slow harmonic changes recede into the background while the timbral alternations take center stage. As we have seen, the voice-leading architecture underlying Op. 16 No. 3 is so aurally obscure that many critics and writers mistakenly believed that timbre itself structured the work; it is more accurate, however, to say that timbre assumes the aesthetic interest of the changing chord sections. Virtually the same could be said about the timbral metamorphoses in mm. 88-111; due to the repetitions, the canonic melody (and the resultant harmonies) are of secondary interest. The contrast and blending of orchestral timbres—the emergence of a kind of *Klangfarbenmelodie*—assumes the foreground aesthetic interest, if not the total structure of the section.

It is undeniable that Schoenberg's principle of *Klangfarbenmelodie* was important to Ligeti and the other Darmstadt composers. In fact it is on this topic that Schoenberg may have had the most influence over the Darmstadt circle. For example, Boulez's famous essay "Schoenberg is Dead" contains the admission that:

> One may, on the other hand, point to a remarkable preoccupation with timbre, in the sense of *Klangfarbenmelodie*, which could be generalized into a timbre series. But the real reason for the stalemate lies in a profound misunderstanding of serial *functions* as such, as engendered, that is, by the actual serial principle—there are traces of them but in an embryonic rather than effective form.[54]

As Boulez's quotation suggests, despite his admired innovations in the realm of *Klangfarbenmelodie*, Schoenberg was no model for the Darmstadt circle. Instead, Webern held the role of vaunted predecessor whose works awaited elucidation. In the next section, I explore how the Darmstadt composers' collective understanding of Webern's brand of *Klangfarbenmelodie* may have been incorporated into Ligeti's works.

Webernian *Klangfarbenmelodie*

Webern's 1935 orchestration of the *Ricercar* from the *Musical Offering* is analogous to Schoenberg's Op. 16 No. 3 in as much as it is the most often-cited example of Webern's understanding of the technique. As Example 4.8 shows, Webern divided the fugue subject into sections by varying the instrumentation. Martin Zenck suggests that "the extraordinary importance of the 'sonorous exterior' [is] exceptional for a composer oriented to structural thinking…"[55] Amongst the Darmstadt circle, however, the timbral divisions of the work were in no way contrary to Webern's usual attention to structure. Instead, the piece was remarkable precisely because it allowed timbre to participate in the structure of the work. As Adorno writes:

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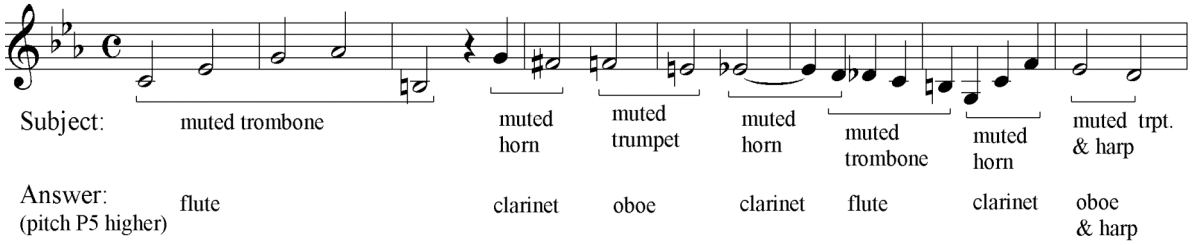
[54] Boulez, "Schoenberg is Dead," *Stocktakings*, 213. Emphasis Boulez's.
[55] Martin Zenck, "Tradition as Authority," 309.

> […] [S]tructural instrumentation would be to use every timbre and above all the mode of orchestration to make real all the structural elements that are indispensable to the articulation of the musical meaning […] Webern provides an object lesson in his orchestration of the six-part *Ricercar* from the *Musical Offering*. Instead of treating the instrumentation as one parameter among others to which it is only abstractly related, the composition should develop the instrumentation from the meaning of the musical events. In that way it would become an authentic parameter, a concrete function of music.[56]



Example 4.8: Webern's orchestration of the fugue from Bach's *Musical Offering*, subject and answer instrumentation, mm. 1-16

Interest in the idea that timbre could perform a structural function in the work was, in part, a reaction against the historical division of composition and instrumentation.[57] As Ligeti points out, orchestration had been a separate activity from composing since the Baroque;[58] Boulez suggests that orchestrating at the end of the compositional process

[56] Adorno, "Music and Technique," *Sound Figures*, 212. See also Karlheinz Stockhausen's comments to this effect, though regarding Webern's Op. 7, in "Arbeitsbericht 1952/53: Orientierung," *Texte* Vol. I (Cologne: DuMont Schauberg, 1963), 36.
[57] Adorno, "Funktion der Farbe in der Musik (1966)," *Darmstadt-Dokumente I*, 263-312.
[58] Ligeti, "Weberns Instrumentation," *Gesammelte Schriften* I, 383-84.

reduces timbre to mere window dressing.[59] For many of the Darmstadt composers, Webern was important because he eroded the distinction between composition as primary and orchestration as secondary. Ligeti explains that:

> Webern eliminates exactly this schism in the compositional process. He did not accomplish this by degrading timbre in the composition to the level of inconsequential—like many of the pre-Baroque clichés of regurgitated theatre music that occur. In contrast, timbre gains an importance to such an extent that it assumes a co-equal dimension to melody, harmony and rhythm in the actual compositional process.[60]

Making timbre a co-equal dimension in the compositional process was an important step toward the total serialization of the musical elements, a goal that preoccupied the Darmstadt composers in the 1950s and 1960s. Here too, Webern's music provided a primary inspiration. His *Das Augenlicht* Op. 26 (1935), *Erster Kantate* Op. 29 (1939) and *Variationen für Orchester* Op. 30 (1940) all follow in the footsteps of the *Ricercar* by segmenting the twelve-tone row with different instruments.[61] As Ligeti says,

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[59] Regarding Webern's structural rather than decorative use of orchestration, see Boulez, "At the Edge of Fertile Land," *Stocktakings*, 169 and "Tendencies in Recent Music," same vol., 177. Already in Debussy, Boulez argues, "The primitive notion of orchestration-as-clothing disappears in favour of orchestration-as-invention; the composer's imagination is not limited to the successive processes of composing the music then tricking it out in orchestral finery; the very fact of orchestrating will influence not only the musical ideas but the actual technique by which they are realized: an initial alchemy, not an applied chemistry" ("Debussy," same vol., 274).

[60] Ligeti, "Weberns Instrumentation," *Gesammelte Schriften* I, 384. "Eben dieses Schisma im Kompositionsprozess hat Webern beseitigt. Nicht etwa dadurch, dass er die Klangfarben in der Komposition auf die Ebene des Belanglosen degradiert hätte—wie dies in manchen auf vorbarocke Klischees zurückgreifenden Spielmusiken geschah. Im Gegenteil, die Klangfarben gewannen dermaßen an Bedeutung, dass sie als eine der Melodik, Harmonik und Rhythmik ebenbürtige Dimension in den eigentlichen Kompositionsprozess eingingen."

[61] Ligeti discusses the segmentation in all of these pieces. See "Weberns Instrumentation," *Gesammelte Schriften* I, 383-388; Weberns komplexe Kompositionstechnik," 373-378; Webern und die Auswirkungen seiner Musik auf die nachfolgende Komponistengeneration," 389-392; Weberns Variationen für Orchester Op. 30," 393-394. All of these are adaptations of radio broadcasts Ligeti gave in the early 1960s.

> One of the conspicuous features of Webern's compositional technique is the coupling of the timbral distribution with the pitch structure, i.e. along the course of the twelve-tone row. The rows are articulated through different internal timbres; in Webern their typical structure is distinguished by three or four groups of four or three tones, respectively. How the timbres change inside of the twelve-tone row differs from work to work, even from movement to movement; but the binding of the timbre and the row structure likewise results in a strong, constructive principle.[62]

Example 4.9 shows the instrumental segmentation of the twelve-tone row in Webern's Op. 30. Ligeti was fascinated with the way the three statements of the row were woven together in the score—one begins literally before the other is finished.[63] Because of the interweaving of row statements, the alternations in timbre became all the more important as structure-bearing elements. That is, the structure of the rows in the beginning of Op. 30 would be completely lost if one ignored the timbral variations. As Boulez suggests, this was characteristic of the late works of Webern, which demonstrated "[…] a contrapuntal-instrumental technique in which each timbre defines a structural aspect of the work."[64]

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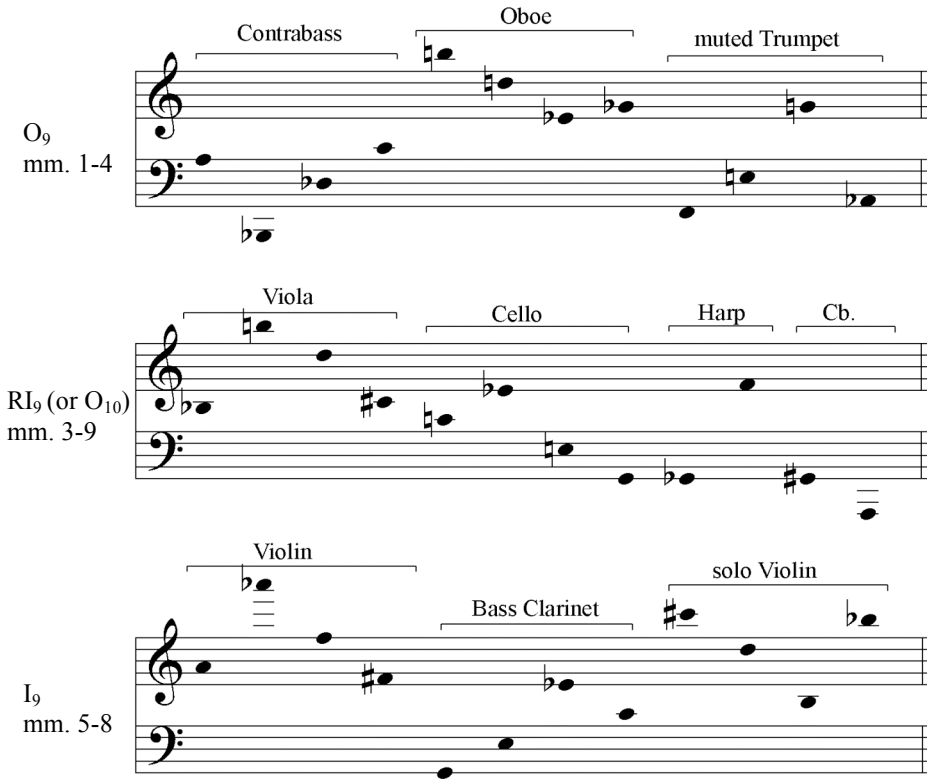
[62] Ligeti, "Weberns komplexe Kompositionstechnik," *Gesammelte Schriften* I, 373. "Eine der auffälligsten Eigenschaften der Kompositionstechnik Weberns ist die Koppelung der Klangfarbendisposition mit der Tonhöhenanlage, genauer gesagt mit dem Verlauf der Zwölftonreihen. Die Reihen werden so durch unterschiedliche Klangfarben intern artikuliert, ihre für Webern typische Gliederung in drei oder vier Gruppen zu je vier beziehungsweise drei Tönen wird hervorgehoben. Wie die Klangfarben innerhalb der Zwölftonreihen wechseln, ändert sich von Werk zu Werk, ja von Satz zu Satz; aber erfolgt die Verbindung von Klangfarben und Reihenstruktur nach ähnlichen, streng konstruktiven Prinzipen."
[63] See Ligeti, "Weberns komplexe Kompositionstechnik," *Gesammelte Schriften* I, 373.
[64] Boulez, "Items for a Musical Encyclopaedia: Webern," *Stocktakings*, 299.

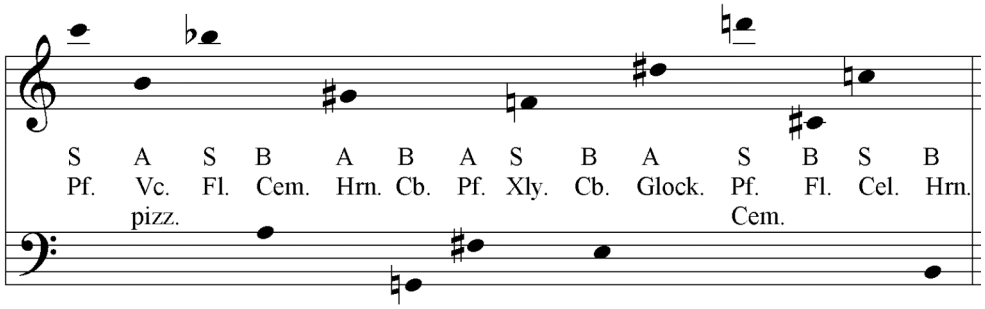


Example 4.9: Webern, *Variationen* Op. 30, mm. 1-9, row structure and timbral variations

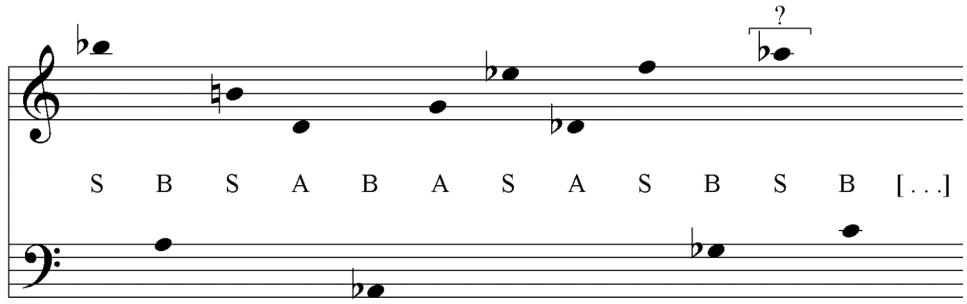
Ligeti apparently had something like this structural, timbral alternation in mind when he was composing *Aventures* and *Nouvelles aventures* between 1962 and 1965. As Examples 4.10 and 4.11 show, there are moments in *Aventures* and *Nouvelles aventures* in which the simplest of twelve-tone rows—descending chromatic scales—are articulated with each pitch sounding a different combination of voice and/or instrument.[65] From the

[65] It appears that Example 4.11 follows from Example 4.10, but with voices only and increasing disorder to the "row"; this fits with Ligeti's compositional procedure. He cut off *Aventures* rather arbitrarily so it would not become too long and later used the discarded material for *Nouvelles Aventures*. See Ligeti, *Ligeti in Conversation*, 44.

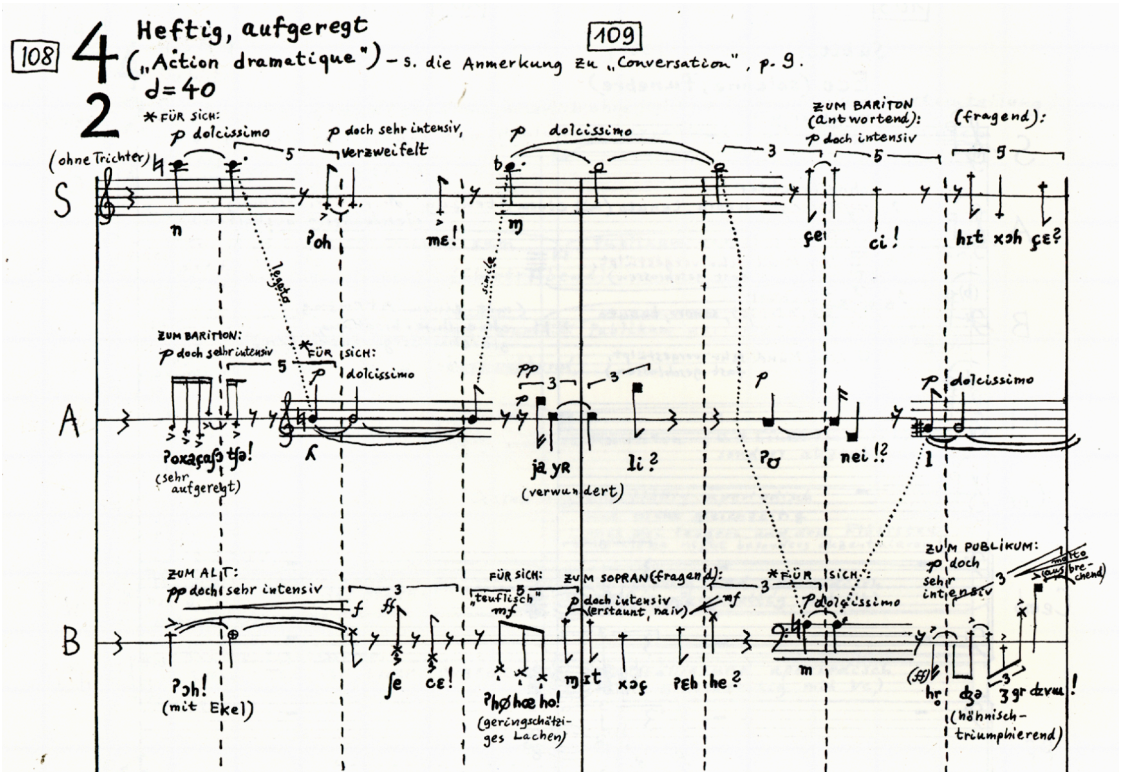
dotted lines that connect the pitches in the score (see Example 4.12), we can infer that Ligeti must have intended the descending scales to be understood as *Gestalten*. The large leaps in register probably disrupt the aural perception of the overall *Gestalt*, though like Webern, Ligeti was probably unconcerned with whether or not the "series" would be perceived as such.



Example 4.10: *Aventures* mm. 108-113



Example 4.11: *Nouvelles aventures* mm. 30-39

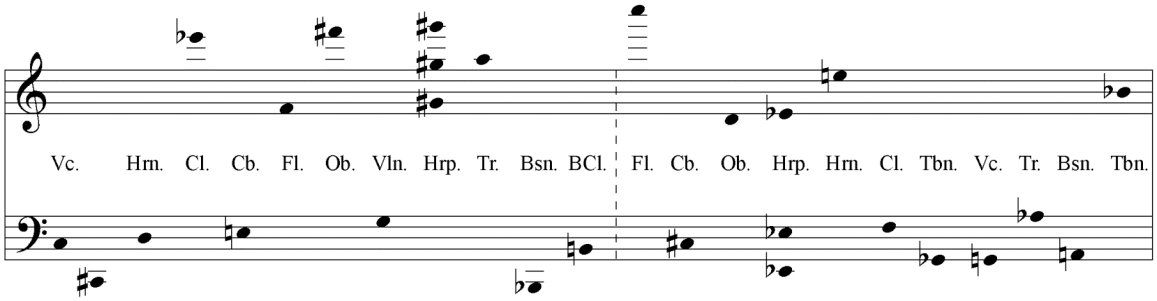


Example 4.12: *Aventures* mm. 108-109, vocal parts only

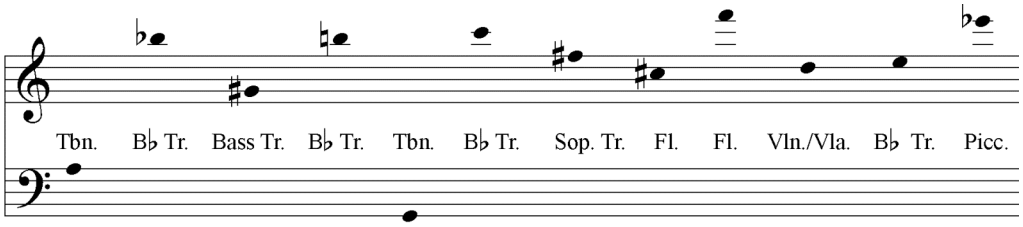
The second movement of the *Cello Concerto* also contains such a passage (see Example 4.13). Perhaps this is unsurprising, since Ligeti has said that the "musical material in the second movement of this concerto is much the same as in *Aventures* only without words."[66] The articulation of the twelve-tone row (or descending chromatic scale) in various instrumental timbres, along with its extreme octave displacements,

[66] Várnai quoting Ligeti, *Ligeti in Conversation*, 52. See also Ligeti's "Zum Cellokonzert," *Gesammelte Schriften* II, 244.

certainly solidifies the connection that Ligeti claims between *Aventures* and the *Cello Concerto*.



Example 4.13: *Cello Concerto*, second movement, m. 63



Example 4.14: Luigi Nono, *Il Canto Sospeso*, first movement, mm. 1-7

These passages from *Aventures*, *Nouvelles aventures* and *Cello Concerto* bear obvious resemblance to the pointillist music of the 1950s and early 1960s by composers such as Pierre Boulez, Karlheinz Stockhausen, Henri Pousseur, Karel Goeyvaerts and Luigi Nono. For instance, Example 4.14 shows that Nono divided the presentation of the twelve-tone row in the first movement of *Il Canto Sospeso* (1955-56) among various octaves and instruments in the score. Visually and aurally, the comparison to Ligeti's

application of the same procedure is striking. Assigning particular timbre, dynamic and rhythmic values to each pitch in the twelve-tone row was one of the key tenets of integral serialism, and for the Darmstadt circle, this idea was directly attributable to Webern.[67] According to Adorno,

> No longer did the arrangement of the intervals between the twelve notes merely provide the material on which the composer's intentions went to work; instead, it was made to supply all the structural elements and determining factors that would result in the creation of the work.[68]

The application of timbral, rhythmic and dynamic parameters to each discrete note produces on the one hand a remarkable unity of compositional material in the serialist works, since all dimensions of the work are drawn from the intervals of the row. On the other hand, it also produces the stylistic effect of the pointillism, where each sound event is precisely defined yet isolated from its neighbors.[69]

Ligeti's division of the "rows" by timbre in *Aventures*, *Nouvelles aventures* and *Cello Concerto* fits well within the pointillist lineage, making contact with Webern's row divisions by instrumentation as well as the Darmstadt composers' understanding of its significance. However, the above passages seem to be an ironic nod toward the pointillist style rather than a wholesale embrace of it. Ligeti's application of the pointillist style here is quite belated—by the mid 1960s, the aesthetics of all of his serialist colleagues

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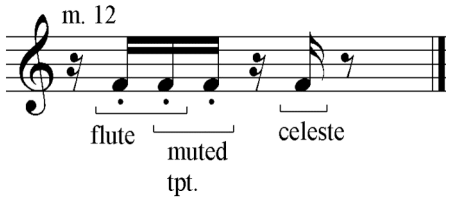
[67] Pierre Boulez, "Possibly (1952)," and "At the Edge of Fertile Land (1955)," *Stocktakings*, 110-140 and 158-172; Henri Pousseur, "Webern's Organic Chromaticism (1955)," *Die Reihe 2*, trans. Leo Black (Eng. ed., 1958): 51-60; Pousseur, "Outline of a Method (1957)," *Die Reihe* 3, trans. Leo Black (Eng. ed., 1959): 44-88; Luigi Nono, "Zur Entwicklung der Serientechnik (1956)," and "Die Entwicklung der Reihentechnik (1958)," *Texte*, ed. Jürg Stenzl (Zürich: Atlantis, 1975), 16-20 and 21-33; Karlheinz Stockhausen, "Situation des Handwerk (1952)," and "Weberns Konzert für 9 Instrumente Op. 24 (1953)," *Texte* I, 17-23 and 24-31; Christian Wolff, "Movement (1955)," *Die Reihe* 2 (Eng. ed., 1958): 61-63.
[68] Adorno, "Anton von Webern," *Sound Figures*, 92.
[69] See Adorno, "Anton von Webern," *Sound Figures,* 99.

had evolved to embrace other techniques. Furthermore, Ligeti's "rows" themselves are merely descending scales, which come across as a tongue-in-cheek reference to the raw material of serialism. Lastly, in the Ligeti passages the changes in instrumentation seem to be layered on top of the scales in a rather superficial way. Perhaps one could say the same about Webern's division of the row in the Bach *Ricercar* and Op. 30, though Webern at least explores the effect of the timbral alternations throughout those pieces. The Ligeti examples, on the other hand, appear as isolated, self-contained segments that have little influence on the structure of the work beyond the moment of their occurrence. These passages function as an *homage* to Webern and the pointillist style that descended from his music, but they fail to engage as thoroughly with the implications of Webern's compositional technique as the Darmstadt composers did earlier, in the 1950s. Instead, Ligeti's use of timbral variation in these "rows" is ornamental rather than structural.

For Ligeti, it was not Webern's division of the twelve-tone row by instrumentation that was the most influential concept. Instead, as examples from the *Cello Concerto* will show, Ligeti found Webern's more infrequent *Klangfarben* changes on a single pitch to be the more fertile ground for development. Ligeti discusses this aspect of Webern's music with examples from Webern's *Orchesterstücke* Op. 10 in his 1963 radio broadcast "Weberns Klangfarbentechnik."[70] As Example 4.15 shows, Webern ends the first piece in Op. 10 with a four-note repetition of the pitch F 4. Ligeti seems to have been quite taken with this example, pointing out that each of the four notes

[70] *Gesammelte Schriften* I, 331-336.

has a different timbre—flute, flute plus muted trumpet, muted trumpet, and celesta. Ligeti traces this alternation on a single pitch back to Schoenberg: "In terms of compositional technique, this spot is analogous to the cited beginning of Schoenberg's Op. 16 No. 3. There, an underlying chordal plane is varied through changes of timbre; Webern however, concentrates variation of timbre on a single pitch."[71]

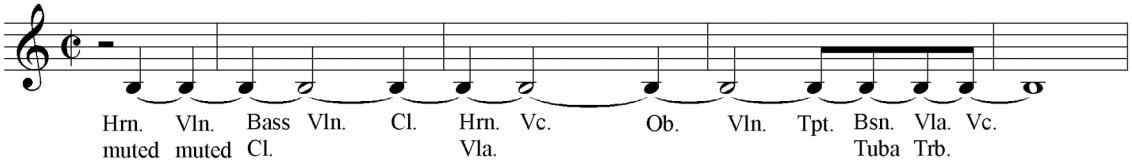


Example 4.15: Webern, Op. 10 No. 1, final measure

Schoenberg and Webern were not the only ones to use the idea of a slowly changing timbral palette in this way. Boulez cites Berg's *Wozzeck* as another example of the same kind of phenomenon (see Example 4.16). As he says, "This is the famous scene of Marie's murder, with a B constantly repeated to the point where the whole orchestra is no more than the monstrous expansion of this one note; it makes quite an effect."[72] Boulez touches on the dramatic effect of the passage in the essay quoted above, but he also hints that it represents an advance in the compositional role of timbre in a second

[71] Ligeti, "Weberns Klangfarbentechnik," *Gesammelte Schriften* I, 332. "Kompositionstechnisch ist diese Stelle analog zum zitierten Anfang von Schönbergs Op. 16 No. 3. Dort wird eine liegende akkordische Fläche durch Klangfarbenveränderung variiert, bei Webern hingegen konzentriert sich die Klangfarbenvariation auf eine einzige Tonhöhe."
[72] Boulez, "Entries for a Musical Encyclopaedia: Alban Berg," *Stocktakings*, 252.

mention of the passage in his book *Penser la musique aujourd'hui*.[73] Likewise, Adorno had commented on this passage as early as 1946.[74] Since Berg certainly did not hold the cult status amongst the Darmstadt circle that Webern did, it is not clear what effect, if any, this example had on Ligeti's understanding of *Klangfarbenmelodie*. But there is reason to suspect Adorno and Boulez's interest in the *Wozzeck* example may have filtered down to Ligeti; in fact, he used a remarkably similar technique at the beginning of the *Cello Concerto*.

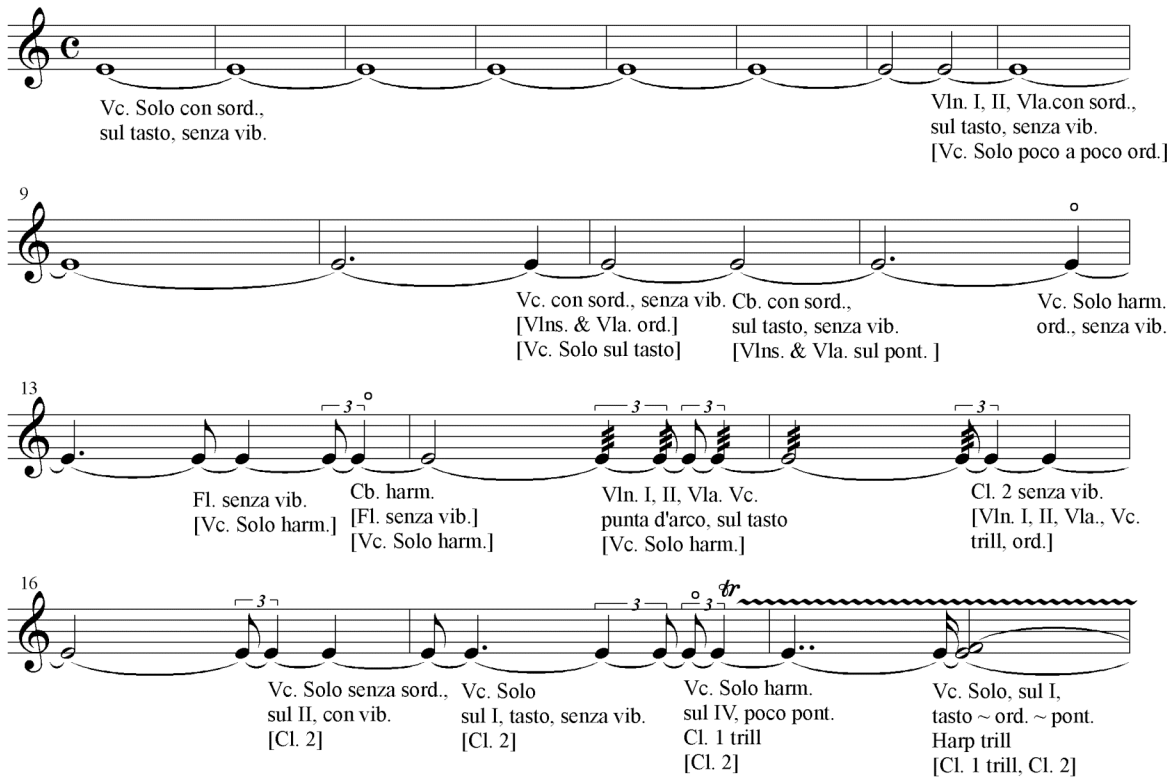


Example 4.16: Berg, *Wozzeck*, Interlude between Scenes 2 and 3 of Act III

The *Cello Concerto* opens with a long meditation on a single pitch, E 4, as the score reduction in Example 4.17 shows. Over the course of nearly two minutes, the timbre of this pitch is constantly varied. In Example 4.17, the new timbre is written at the point of its articulation, while the text in brackets describes the instrumental timbres that remain from earlier articulations. One finds a similar long, slow timbral alternation in the

[73] Boulez, *Penser la musique aujourd'hui*, (Paris: Denoel/Gonthier, 1987); in English as *Boulez on Music Today*, trans. S. Bradshaw and R. R. Bennett (Cambridge, MA: Harvard University Press, 1971), esp. 61-66. I refer to the English edition.
[74] Adorno, "Neunzehn Beiträge über neue Musik," *Gesammelte Schriften* XVIII, 59. Quoted in Schmusch, "Klangfarbenmelodie," 227.

opening of *Lontano*, and perhaps even in the opening of *Atmosphères*, though on a massive cluster there rather than a single pitch.[75] But the *Cello Concerto* remains the single most extended passage in Ligeti's *œuvre* to thoroughly explore timbral changes on a single pitch.



Example 4.17: *Cello Concerto*, first movement, mm. 1-18

[75] Ligeti explains in a 2002 commentary, "The first movement, a slow movement, is heard as the same type as *Atmosphères*, its form being static, without rhythm, continuous." "Zum Cellokonzert," *Gesammelte Schriften* II, 244. "Der erste, ein langsamer Satz, gehört zum Typus von *Atmosphères*, seine Form ist statish, ohne Rhythmus, kontinuierlich."

Webern's *Klangfarbenmelodie* changes on a single pitch—like the final measure of Op. 10 No. 1—are the height of aphoristic, crystallized musical gestures. The tendency of Webern to distill music down to its most concentrated, isolated elements was a point of admiration for the Darmstadt composers. As Eimert writes, "[…] for the most and vital part, Webern's music is hard and thin, clear and exact, of expressive sensibility and the most minute formal exactness […]"[76] Boulez says that one of Webern's most lasting contributions was to "rehabilitate the powers of sound"—that is, to redirect the listeners' attention to the purity and beauty of single, independent musical sounds: "And if one can, in a certain sense, maintain—o Mallarmé!—that Webern was obsessed with formal purity to the point of silence, it was an obsession that he carried to a degree of tension hitherto unknown in music."[77]

Ligeti is clearly also impressed with Webern's tendency to concentrate and distill in the realm of *Klangfarbenmelodie*: "[…] in Webern, the arrangement of contrasts is further enhanced by the principle of *Klangfarben* economy."[78] In the *Cello Concerto*, Ligeti expands upon this idea of timbral economy by using changes on a single pitch to sustain compositional interest. The beginning of the *Cello Concerto* is, of course, literally an expansion on Webern's tiny *Klangfarben* sequences seen in pieces such as Op. 10 No. 1. But by fixating on controlled timbral variations over such an extended period of time in the *Cello Concerto*, Ligeti actually magnifies Webern's economy of

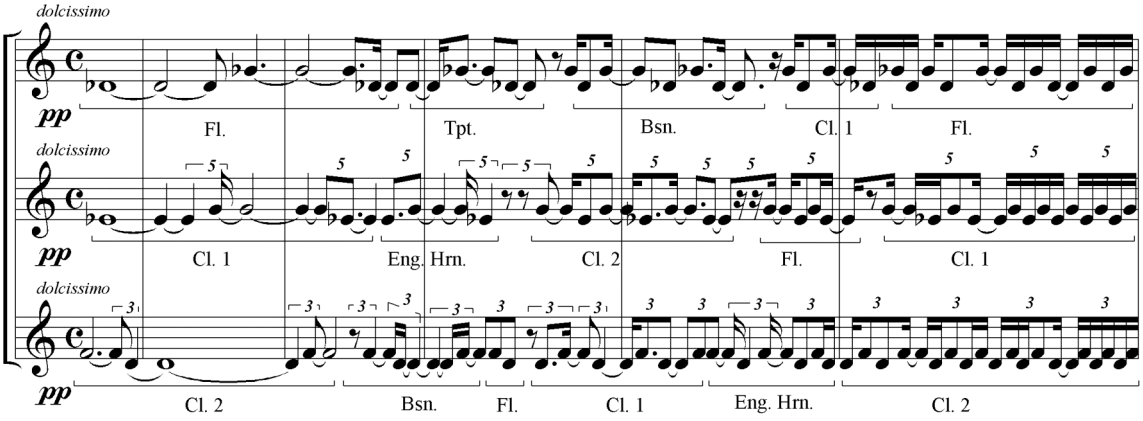
[76] Herbert Eimert, "A Change of Focus," *Die Reihe* 2, trans. Leo Black (Eng. ed. 1958): 31.
[77] Pierre Boulez, "The Threshold," *Die Reihe* 2, trans. Leo Black (Eng. ed. 1958): 40. Adorno makes a similar point in "Anton von Webern," *Sound Figures*, esp. 96-99.
[78] Ligeti, "Weberns *Klangfarbentechnik*," *Gesammelte Schriften* I, 334. "…bei Webern zur Disposition von Kontrasten noch das Prinzip der Klangfarbenökonomie hinzukommt."

material and means, which he and his colleagues had so admired. The restraint that characterizes Webern's aesthetics is stretched even further in the opening of the *Cello Concerto*—a single pitch, along with its timbral variations, sustains the compositional interest. The Darmstadt composers argued that Webern's restrained aesthetics enabled us to "hear again"; his music stripped away the melody, harmony and polyphony that held up traditional music and taught us to listen to sounds for their particular, individual qualities—including timbre. Ligeti took this discourse much further when he literally stripped away melody, polyphony and harmony at the beginning of the *Cello Concerto*, reducing the music to timbral changes on a single pitch. With the extreme reduction of compositional means and the concomitant call to listen intently to a single sound in the *Cello Concerto*, Ligeti capitalized upon the reigning discourse that the Darmstadt circle produced around Webern's small, aphoristic pieces.

The opening of the second movement of the *Cello Concerto* can also be understood as a variation on Webernian *Klangfarbenmelodie*.[79] As Example 4.18 shows, three melodies are presented, each with timbral alternations. The three melodies are played simultaneously, so that the timbral alternations in each melody are less obvious than in the first movement. Instead, the effect is one of a composite timbral change—the clarinet/flute mixture prominent at the beginning of the passage; a brassy, nasal-inflected timbre with the introduction of bassoon, English horn, and trumpet in the middle; finally

[79] Ligeti says that despite their apparently contrasting characters, the two movements "represent two different realizations of the same musical-formal idea and actually have one and the same musical construction plan as their foundation." "Konzert für Violoncello und Orchester," *Gesammelte Schriften* II, 243. "Sie stellen zwei verschiedene Realisationen derselben musikalisch-formalen Idee dar und haben sogar ein und denselben musikalischen Bauplan als Grundlage."

returning to the mellow clarinet/flute mixture of the opening.[80] It is important to note that this concatenation of timbres is due in large part to the fact that the pitches of the melodies mix together into a cluster that spans D 4 – G-flat 4. The inseparability of the pitches contributes to the inseparability of the timbres—with no gaps in pitch space and continuous sound, it is difficult to grasp the timbral alternations in each melody individually. Instead, the timbral alternations are homogenized, appearing as one complex, shifting mass.



Example 4.18: *Cello Concerto*, second movement, mm. 1-6

If Webern was indeed the inspiration behind passages such as the opening of both movements of the *Cello Concerto*, Ligeti also drew upon the insights of the electronic music studio. As he says:

[80] The composite timbral change from mellow to nasal and back is due to the differences in the harmonic spectra of a mixture of flute/clarinet, which are dominated by lower overtones, compared with a mixture of trumpets, English horn and bassoon, which have many prominent upper overtones.

> This kind of subtle shifting of timbres points the way toward compositional methods, which were unknown earlier; they were taken up and more widely developed only after Webern's death, especially in electronic music. The inner articulation and metamorphosis of timbral spectra, which have been realized by electronic means ever since the 1950s, is like a seed that was already established as a possibility in the closing bar of the first orchestra piece in Webern's Op. 10.[81]

In particular, the common electronic music technique of additive synthesis (discussed in Chapter 3) afforded composers control over the timbral quality of the sound. By varying the upper partials above a fundamental, composers could emphasize particular qualities of the sound, aiming to create a continuum of timbres. Another technique, *Bewegungsfarbe*, played pulses or rhythms so fast that the individual events became indistinguishable and blended together into a timbral mixture.[82] Ligeti probably would have had both of these electronic techniques in mind as he wrote passages such as the opening of each movement of the *Cello Concerto*, though Ligeti apparently once again found the acoustic medium to be the most efficacious way to render his ideas. The electronic techniques described above were quite labor intensive with the limited analog studio equipment available in the electronic music studio of the late 1950s and early 1960s. Furthermore, as the quotation above suggests, Webern was in no way absent from the discourse surrounding *elektronische Musik*. Ligeti (and his colleagues) thought of

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[81] Ligeti, "Weberns Klangfarbentechnik," *Gesammelte Schriften* I, 333. "Diese Art der subtilen Klangfarbenumschichtung wies den Weg zu kompositorischen Verfahren, die früher unbekannt waren, erst nach Weberns Tod wieder aufgegriffen und weiterentwickelt wurden, und zwar in der elektronischen Musik. Die innere Artikulation und Metamorphose von Klangspektren, die seit den fünfziger Jahren mit elektronischen Mitteln realisiert wurden, ist keimhaft, als Möglichkeit schon in diesem Schlusstakt des ersten Orchesterstücks aus Weberns Op. 10 angelegt."

[82] See for instance, Werner Meyer-Eppler, "Zur Systematik der elektrischen Klangtransformation," *Darmstädter Beiträge* 3 (1960): 73-87 and Stockhausen, "…wie die Zeit vergeht…" *Die Reihe* 3 (1957): 13-42; (Eng. ed., 1959): 10-40. As discussed in Chapter 3, Ligeti was intimately acquainted with the theories and writings of Meyer-Eppler, Stockhausen, Koenig, Eimert and others involved with *elektronische Musik*.

Webern as the inspiration—the seed—behind the timbral possibilities that were further explored in electronic music. The *Cello Concerto*, as well as *Atmosphères* and many other of Ligeti's sound-mass works, show the effect of the converging lineages of Webern's influence and contemporary developments in electronic music.

As the foregoing discussion has shown, the Darmstadt circle and Ligeti took inspiration from both Schoenberg and Webern's musical experiments with *Klangfarbenmelodie*. In the case of Schoenberg, the Darmstadt composers found his ideas about *Klangfarbenmelodie* to be intriguing even as they derided most of his music throughout the 1950s and 1960s as too old-fashioned and bound up with traditional forms. This collective embrace of Schoenberg's idea of *Klangfarbenmelodie* was particularly important to Ligeti, who frequently traced lineages descended from Schoenberg's ideas in his lectures and articles on *Klangfarbenmelodie*. Furthermore, Ligeti applied the Schoenberg's technique of projecting *Klangfarbenmelodie* on top of a polyphonic structural background in *Lontano*. In the case of Webern, Ligeti capitalized on and contributed to the dual Darmstadt discourses that emphasized, on the one hand, Webern's structural use of timbre to articulate row structure and, on the other hand, his concentration of musical sound into tiny packages. In the *Cello Concerto*, Ligeti followed Webern's precedent, allowing the *Klangfarben* changes to take center stage by severely curtailing the salience of the traditional parameters of melody, harmony and counterpoint.

It remains difficult to say what constitutes a "true" *Klangfarbenmelodie*, given the uncertain definition of the term and the dual importance of both Schoenberg and Webern's musical applications of *Klangfarbenmelodie* in its reception history. What is clear is that Ligeti engaged with the discourses around both Schoenberg and Webern's use of *Klangfarbenmelodie*—discourses that were heavily shaped by Adorno as well as the younger generation of Darmstadt avant-gardists—and applied these ideas in his writings and his own works. *Lontano*, *Aventures*, *Nouvelles aventures* and the *Cello Concerto* all bear traces of this intellectual history put to musical use.

Chapter 5

The Influence of Webern and Bartók on Ligeti's *Requiem*

"Webern is the threshold of new music; any composer who has not profoundly experienced and understood the ineluctable necessity of Webern is perfectly useless."
—Pierre Boulez, "Entries for a Musical Encyclopedia: Anton Webern" (1961)[1]

Darmstadt 1959

Ligeti had scarcely been a part of the Darmstadt avant-garde circle for two years when he was invited to lecture on the topic of Webern's music at the 1959 *Ferienkurse*. This invitation marked his rising visibility among his more well established colleagues, despite the fact that *Apparitions* (1958-59) and *Artikulation* (1958) were his only two pieces to have been performed outside Hungary to date. His notes for the seminar reveal that he prepared copiously for the event.[2] His personal notes comprise a bibliography and 175 pages of analysis (on small graph paper) of the first and second movements of Webern's *Variationen für Klavier* Op. 27. In addition, the folder also contains about 50 pages of specific lecture notes, in which Ligeti organized his remarks for the Darmstadt seminar. He focused primarily on symmetrical structures in Webern's *Konzert* Op. 24, first movement, the *Symphonie* Op. 21, second movement, the *Erster Kantate* Op. 29, second movement, and especially the *Variationen für Klavier* Op. 27, second movement.

[1] *Stocktakings from an Apprenticeship*, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 303.
[2] György Ligeti Collection, Paul Sacher Foundation.

In its entirety, this folder of preparations provides a thorough synopsis of Ligeti's thoughts on Webern's music at an early stage of development.[3] Moreover, the folder suggests that in the late 1950s, Ligeti was deeply involved in developing his ideas about Webern's music and making compelling analytical arguments in order to prove his abilities to the more established composers in his *Ferienkurse* audience. Many of his observations acknowledged and developed themes that Stockhausen, Eimert, Nono and Pousseur had already introduced in their analytical writings.[4] In particular, the above authors explored the concept of symmetry in Webern's music—which is likewise the thematic locus of Ligeti's 1959 Darmstadt lecture—as early as 1953. Yet Ligeti's Darmstadt lecture notes differ greatly from his colleagues' writings in as much as he linked Webern's symmetrical structures to those found in Bartók's *œuvre*. Examples 5.1 and 5.2 reproduce two pages of Ligeti's lecture notes, which he apparently used for the 1959 Darmstadt presentation.[5]

[3] Ligeti continued to lecture, publish and produce radio broadcasts on Webern's music throughout the 1960s. The vast majority of Ligeti's broadcasts and writings on Webern are published in György Ligeti, *Gesammelte Schriften* Vol. I, ed. Monika Lichtenfeld (Mainz: Schott, 2007), 325-412.

[4] Karlheinz Stockhausen, "Webern's *Konzert für neun Instrumente* Op. 24," *Texte* Vol. I (Cologne: M. DuMont Schauberg, 1963), 24-31; the article originally appeared in *Melos* 12/20 (Feb. 1953). A number of important Webern analyses appeared in 1955 in *Die Reihe* 2 (Eng. ed., 1958): Stockhausen, "Structure and Experiential Time," 64-74; Herbert Eimert, "A Change of Focus," 29-36 and "Interval Proportions," 93-99; and Henri Pousseur, "Webern's Organic Chromaticism," 51-60. See also Luigi Nono, "Zur Entwicklung der Serientechnik," and "Die Entwicklung der Reihentechnik," *Texte* (Zurich: Atlantis, 1973), 16-20 and 21-33; the articles originally appeared, respectively, in *Gravesaner Blätter* 4 (May 1956): 14-18 and *Darmstädter Beiträge zur Neuen Musik* 1 (1958): 25-37.

[5] My translations of Ligeti's German notes appear in square brackets, but otherwise, I reproduce Ligeti's notes exactly.

Durch sym. Distanz Aufteilung:
[Symmetric partitioning of the distance]

WS 6

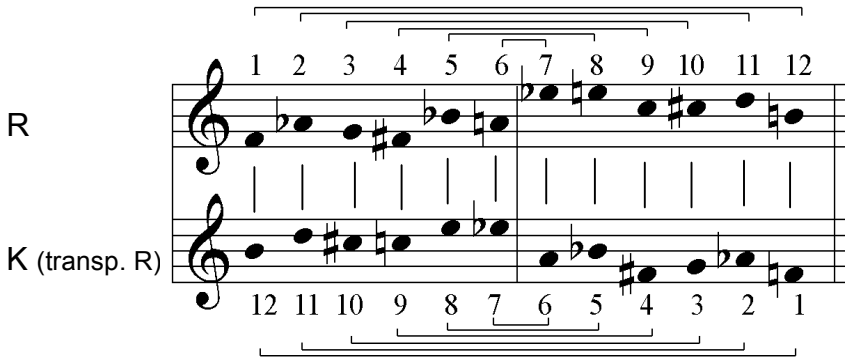
POL – GEGENPOL SYSTEM (Lendvai)
[POLE – COUNTERPOLE SYSTEM (Lendvai)]

(Pol: Nomenklatur anders als bei Pousseur)
[Pole: Nomenclature differs from that of Pousseur]

TONBAND [SCORE]	W. Op. 21, II
TAFEL [CHALKBOARD]	"Thema" t. 1-11

R	1	2	3	4	5	6	7	8	9	10	11	12
K	12	11	10	9	8	7	6	5	4	3	2	1

TAFEL:
Reihe, Krebs in Op. 21, II Thema
[Original, Retrograde in Op. 21, II Theme]



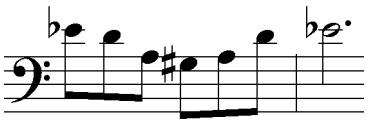
Example 5.1: Page six of Ligeti's lecture notes for the Darmstadt seminar, 1959
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

Ähnliches bei Bartók:
[Similar to Bartók]

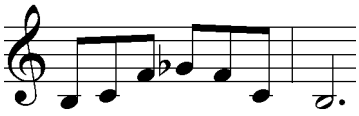
WS 8

KLAV [PIANO]	Mikrokosomos IV 109
TAFEL [CHALKBOARD]	Von der Insel Bali

Zwei ineinandergeschobene Systeme
[Two overlapping systems]



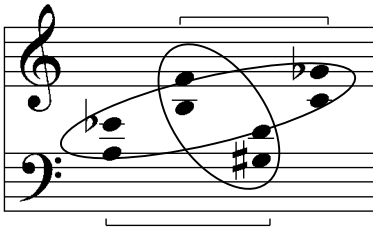
und



SPIEGELUNG!
(↕ und ↔ !!!!)

[Mirrored!]

aus:
[from]



Example 5.2: Page eight of Ligeti's notes for the Darmstadt seminar, 1959
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

As Example 5.1 reveals, Ligeti referred to Lendvai's axis system for analyzing Bartók's music[6] and probably elaborated this reference with a discussion of the tritone pairs that he bracketed, from the center outward, in the Webern Op. 21 second movement rows. Just two pages later in the notes, Ligeti wrote "similar to Bartók" and apparently planned to play and show on the blackboard an example from Bartók's *Mikrokosmos* No. 109 (see Example 5.2). Ligeti clearly referenced the imbricated tritones contained in his Bartók examples, but his margin note also excitedly called attention to the vertical and horizontal mirror symmetries found in the Bartók excerpts.

The Webern and Bartók examples that Ligeti cited in the lecture notes are structurally similar in a few specific ways. First, his notes emphasize the role of the tritonal pairs in both themes. The horizontal and vertical brackets show that he was impressed with the properties of Webern's row, which is constructed so that the same tritonal pairs (that is, the same pitches in each tritone) result whether one proceeds vertically, linking the original and retrograde row forms, or horizontally from the center using only one row. Ligeti apparently found the tritone pairs in the theme of Webern's Op. 21 second movement to be a compelling recollection of Bartók, since he pointed out that Bartók's use of imbricated tritones (or a fully diminished seventh chord) form the structural foundation of the *Mikrokosmos* melodies, as shown at the bottom of Example 5.2.

[6] Lendvai's axial and Golden Section analyses of Bartók's music were published in Hungary between 1947 and 1955; in English, see Ernö Lendvai, *Béla Bartók: An Analysis of His Music* (London: Kahn and Averill, 1971) and *Bartók's Style*, trans. Merrick and Pokoly (Budapest: Akkord, 1999).

In addition to the tritone relations, both the Webern and Bartók examples are symmetrically constructed. (Of course, the tritone is itself a symmetrical division of the octave.) Most obviously, the two examples exhibit mirror symmetry, or a palindromic interval sequence, about the midpoint. The symmetry is easily visible in the Bartók example, and the interval sequence confirms it: -1, -5, -1, +1, +5, +1. Likewise, the interval sequence for the Webern row shows palindromic construction: +3, -1, -1, +4, -1, -6, +1, -4, +1, +1, -3. Thus, retrograding the row or melody actually does not change the interval sequence at all. It is clear that Ligeti was intrigued by this shared use of palindromes, since he marked the midpoint in the Webern example and called attention to the "mirrored" shapes in the margin of the Bartók page.

Similar observations regarding the symmetrical shapes of the tritone and palindrome, along with the same musical examples, appear in the 1960 radio broadcast "Formtendenzen bei Webern"[7] and the 1961 broadcast "Über Bartóks Harmonik."[8] In the second talk, Ligeti emphasized that symmetry is characteristic of Bartók's music. More importantly, he again linked Bartók with Webern:

> This symmetrical permutability likewise revives the possibility of inversion and retrograde motions of the individual melodic and harmonic shapes, one stylistic

[7] Ligeti, *Gesammelte Schriften* I, 364-368.
[8] Ligeti, *Gesammelte Schriften* I, 302-308. The editor's note at the end of the article suggests that it was one of two Bartók-themed talks prepared for broadcast over the Bayerischen Rundfunk, Munich. Though the broadcast was produced (as a favor, by the Hessischen Rundfunk in Frankfurt rather than the Bayerischen Rundfunk), there is no record of its broadcast. The printed musical examples also seem incompatible with a radio broadcast and are not characteristic of Ligeti's other broadcasts on Webern themes, for instance. Perhaps the text that appears in the *Gesammelte Schriften* was initially conceived as an article but never published, or was used as the foundation for the broadcast commissions instead of published.

> feature that brings Bartók's music in many respects near to that of Schoenberg and Webern.[9]

Finding symmetry, in either Webern or Bartók's music, was a popular analytical pursuit in writings of the time—observations about symmetrical structures were hardly Ligeti's insight alone. What is remarkable about his analysis, however, is that Ligeti forges a new path with his attempts to link Webern and Bartók's joint interest in symmetry. There was no obvious precedent for the linking of Bartók's compositional techniques with any of the Second Viennese composers—this line of thinking is absent from the other Darmstadt composers' writings as well as from contemporary Hungarian interpretations of Bartók.[10]

Lendvai, the most famous Hungarian theorist of Bartók's music, developed analyses of Bartók based on the Golden Section, the Fibonacci series and symmetry. Hungarian readers widely understood his analyses to establish a dichotomy between Schoenberg and Bartók, which construed Bartók as the composer who had found a solution to the breakdown of tonal system and thus triumphed against the forces of history.[11] That Ligeti agreed with and helped to articulate this interpretation is clear in his 1955 article "Remarks on Several Conditions for the Development of Bartók's

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[9] Ligeti, Über Bartóks Harmonik," *Gesammelte Schriften* I, 302. "Diese symmetrische Vertauschbarkeit birgt zugleich die Möglichkeit der Umkehrung und der Krebsbewegung der einzelnen melodischen und harmonischen Gestalten in sich, ein Stilmerkmal, das Bartóks Musik in manchen Aspekten in die Nähe Schönbergs und Weberns rückt."

[10] Though Ligeti's contemporaries did not link Bartók and the Second Viennese School, later scholars have been willing to acknowledge similarities. See Elliott Antokoletz, *The Music of Béla Bartók* (Berkeley: University of California Press, 1984), 16-25.

[11] Rachel Beckles Willson, *Ligeti, Kurtág, and Hungarian Music During the Cold War* (Cambridge: Cambridge University Press, 2007), 57-59.

Chromaticism."[12] In it, Ligeti argues that both the diatonic and the twelve-tone systems are flawed—diatonicism because of its inescapable tonic polarity, and dodecaphonism because the equalization of all twelve pitches produces a static quality in the musical form.[13] Yet Ligeti says,

> A way out of this contradiction was presented in Bartók's chromatic technique, which illustrates that the twelve-tone tempered system can also have other means of manipulation. Whereas Schoenberg comes to the twelve-tone system through the requirements of atonality, Bartók starts from 'twelve-tonalism'—as from a given tone system rather than from an atonal row—and he comes to an entirely new formation of tonality (the expression "tonality" is to be understood in a very wide sense, naturally the matter in question is not major/minor tonality, but rather a new system of relations within this 'twelve-tonalism'.)[14]

From the article cited above, it is clear that Ligeti agreed with Lendvai's reading of Bartók as being opposed to Schoenberg and the Second Viennese School, at least when he was still living in Hungary in the early 1950s.

All of this raises the question: why did Ligeti then revise his conception of Bartók's relationship to the Second Viennese School, writing just four or five years later (and after his emigration to Western Europe) that: "Symmetrical permutability […] brings Bartók's music in many respects near to that of Schoenberg and Webern"? The relationship that Ligeti saw between Webern and Bartók reflects his uniquely personal interpretation of both composers, but that is not to say that Ligeti remained uninfluenced

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[12] Ligeti, "Remarks on Several Conditions for the Development of Bartók's Chromaticism," trans. Sallis and Finger, *An Introduction to the Early Works of György Ligeti* (Cologne: Studio, 1996), 256-261. The original is found in Hungarian in *Új Zenei Szemle* 6/9 (Sept. 1955): 41-44; also translated into German by Éva Pintér as "Zur Bartók's Chromatik," *Gesammelte Schriften* I, 295-301. I refer to the English translation.

[13] Ligeti, "Remarks on Several Conditions," *An Introduction to the Early Works*, 258-260. Ligeti's critique of dodecaphonism here can be understood as the "seeds" of his more well-developed critique argued in "Metamorphoses of Musical Form," *Die Reihe* 7 (Eng. ed., 1965): 5-19.

[14] Ligeti, "Remarks on Several Conditions," *An Introduction to the Early Works*, 260.

by contemporary interpretations of Webern and Bartók in either Hungary or Western Europe. Throughout the rest of this chapter, I trace the complicated politics and reception of Bartók's music in both Hungary and post-war West Germany and suggest that Ligeti's interpretations of Bartók reflected these cultural and political circumstances. Likewise, I show how Ligeti's analyses of Webern stem from those already published by the Darmstadt composers. Ligeti's *Requiem* (1963-65) serves as the meeting ground of the two composers in terms of Ligeti's compositional language. I show how both Bartókian and Webernian concepts of symmetry are important to Ligeti in the *Requiem*.

Ultimately, it is my contention that the concept of symmetry—which Ligeti explored extensively in Webern's music in the West—allowed him to continue to interact with an issue that had interested him in Bartók's music, though by proxy. Cold War politics made it impossible for Ligeti to pursue the in-depth "formalist" Bartók analyses he may have wished, either in Hungary or in the West. Ligeti's willingness to link Webern and Bartók, in his writings and also in his *Requiem*, is evidence that Webern functioned as something of a substitute for Bartók. It was through the idea of symmetry that Ligeti found a way to join these two unlikely bedfellows—though he remained always mindful of the Cold War cultural climate.

Bartók East and West

According to Ligeti, the end of the Second World War brought both incredible daily hardship and a renewed hope for an autonomous, artistically vibrant Hungary:

> There was no glass in any window in all Budapest, the empty window-frames were filled with paper, at best boarded up with thin pieces of wood. In the course of the autumn, as it got colder and colder, the windows had to be kept constantly closed, making it dark even by day. There was no heating fuel; through the flats and houses, densely filled with people, there blew a bitter cold. But we took hardly any notice of the daily hardships; the war was over and the city pulsed with cultural and artistic life in all its varieties and colours. The end of the Nazi dictatorship set free a burst of intellectual energy, the arts flourished. Hungry and freezing, but with undreamt-of vigor, the surviving authors and artists went to work.[15]

In this climate of artistic renewal, Bartók regained his place—which he held beginning in the 1920s, but which was challenged by the Nazi regime—as the symbolic head of Hungarian musical life. As Rachel Beckles Willson explains, "Although Bartók died just a few months after the war ended, he was to become a powerful symbol of national renewal."[16] Ligeti corroborates this account, saying that after the war, he, Kurtág and their Hungarian colleagues "saw in Bartók's music the basis of further development of a new chromatic-modern musical idiom which was to be international and nevertheless rooted in Hungarian tradition."[17]

> In the context of this initial period of great hope, Ligeti recalls that,
>
> […] [W]e did not notice we were already in the process of sliding from one totalitarian dictatorship into another; the Stalinist, Communist Dictatorship, which at the start appeared in disguise, was a short time later to put an abrupt end to freedom and the flourishing of art and culture.[18]

After tolerating "free" elections in 1945, the Soviet dictatorship enacted swift changes just a few years later to bring the government and civil society of Hungary under its

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[15] Ligeti, "Meeting with Kurtág in Post-War Budapest," trans. John A. Hannah *New World Magazine* 16 (July 2006): 70-72. Quote, 70.
[16] Beckles Willson, *Ligeti, Kurtág and Hungarian Music*, 28.
[17] Ligeti, "Meeting with Kurtág," 71.
[18] Ligeti, "Meeting with Kurtág," 70.

control. Schools and colleges were nationalized in 1948 and 1949; the Musicians' Free Association[19] was disbanded in 1949 and replaced with a Soviet mouthpiece organization, which controlled concert programs and commissions; the activities of religious organizations and churches were severely curtailed by 1950.[20] Intellectuals, writers, musicians and artists were censored and/or removed from academic posts beginning in 1948. As Beckles Willson notes, "…much of Western literature—Mauriac, Proust and Joyce, for instance—was withdrawn from circulation. Hungarian literature from the past was bowdlerized, as was music: Bartók's middle-period works were banned."[21] It goes without saying that the Soviet regime's censorship of any art, literature or music perceived as too "modern" or "Western" amounted to a great loss for Ligeti and the Hungarian people. I will limit my discussion here to the contested nature of Bartók's music under the Soviet dictatorship since the loss of some of Bartók's *œuvre* had a significant impact on Ligeti's musical development.

Bartók's suitability as a model for post-war Hungarian musical development began to be questioned as early as 1948, when Andrei Zhdanov and the Soviet Communist Party enacted cultural prescriptions that effectively mandated Socialist

[19] The Musician's Free Association was something of a Hungarian ISCM, offering performance opportunities, networking and pedagogical seminars to foster an active musical life in post-war Hungary.
[20] Beckles Willson, *Ligeti, Kurtág and Hungarian Music*, 28-30. See also Danielle Fosler-Lussier, *Music Divided: Bartók's Legacy in Cold War Culture* (Berkeley: University of California Press, 2007), 1-27, esp. 1-2; and Sallis, *An Introduction to the Early Works*, 30-46, esp. 30-35.
[21] Beckles Willson, *Ligeti, Kurtág and Hungarian Music*, 30. See also Richard Steinitz, *György Ligeti: Music of the Imagination* (Boston: Northeastern University Press, 2003), 25-27.

Realism and denounced formalist or modernist styles.[22] It seems on first glance that, given his pedagogical output, his collecting of folk songs and reliance on folk song material in his concert works, Bartók would have been a perfect model for the kind of folksy Socialist Realism the Communist Party sought to foster. As Danielle Fosler-Lussier explains,

> […] [A] dream that was cherished by many Hungarian musicians during this otherwise demoralizing period [was] that Hungarian music—the tradition of Bartók and Kodály—would emerge as a model for, or even the basis of, a new international socialist music tradition. This hope for the future of Bartók's music was intimately bound up with the hope that Hungary would be able to follow a third road, a path between Eastern and Western European cultural powers.[23]

The reality of the Cold War political situation, however, proved much different.

Soviet officials actively thwarted the idea of a middle road, first and foremost, by demanding that Hungarian party officials take a stand against bourgeois decadence in Bartók's music.[24] In 1949, Hungarian Party official András Mihály was asked to address the way in which Bartók's *œuvre* might or might not serve as a model for the future of Socialist Realism in Hungary. Mihály modeled his lecture after Zhdanov's decree on music, which had judged certain Russian composers as acceptable (Glinka, Tchaikovsky, Rimsky-Korsakov and Mussorgsky) and others as unacceptable (Shostakovich,

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[22] The four-part *Zhdanovshchina*, or Zhdanov reforms, were enacted in Hungary in 1948; see Fosler-Lussier, *Music Divided*, 4-7. On the *Zhdanovschina* in the Soviet Union, see Richard Taruskin, *Oxford History of Western Music*, Vol. V (Oxford: Oxford University Press, 2005), 8-13.
[23] Fosler-Lussier, *Music Divided*, 7.
[24] Fosler-Lussier, *Music Divided*, 16; Sallis, *An Introduction to the Early Works*, 43-46; Taruskin, *Oxford History of Western Music* V, 18-20.

Prokofiev), based on the degree of "classicism" or "formalism" in their works.[25] The situation was at once much simpler and much more difficult in Hungary, though, as Fosler-Lussier says: "Mihály really had only one figure to call upon—Bartók—and one who moreover did not fall cleanly on one side or another of the divide […] Milhály's 'sharp debate' consisted of attempts to come to terms with a single figure's work."[26] Unwilling to disparage Bartók's *œuvre* completely, Mihály attempted to save some of it by focusing on the palatability of the late *Concerto for Orchestra* and arguing that "Bartók's career traced one long progression away from formalism and toward a closer connection with his people."[27] This interpretation, however, ultimately proved unacceptable, given the hardening dogmatism of the Party.[28]

Despite the Hungarian public's and critics' resistance to the Soviet criticisms of Bartók's style, the Party continued to hold Bartók at the center of the tug-of-war between bourgeois, formalist decadence and Socialist Realism. A year later, in 1950, Hungarian journalist Géza Losonczy wrote at the behest of Soviet Party officials that:

> It is not possible, however, to turn one's eye away from the fact that in Béla Bartók's art deep traces were left by the decadence and formalism of bourgeois music. Béla Bartók's genius was nourished not only by the pure sources of Hungarian folk music, but also by the bourgeois, decaying art of his time. Bartók's *œuvre* carries with it the signs of this unceasing struggle that was carried

[25] Fosler-Lussier, *Music Divided*, 18; Taruskin, *Oxford History of Western Music* V, 9-13. The text of Zhdanov's decree was published a week after his speech in the Hungarian journal *Zenei szemle* 1 (March 1949): 16-27. It appears in English in *On Literature, Music, and Philosophy*, anon. trans., (London: Lawrence and Wishart, 1950).
[26] Fosler-Lussier, *Music Divided*, 18-19.
[27] Fosler-Lussier, *Music Divided*, 20.
[28] Fosler-Lussier, *Music Divided*, 21.

> on in him between the positive inspiration of the Hungarian folk music tradition and Western bourgeois decadence.[29]

The Party's insistence that Bartók's *œuvre* was an unacceptable model for the future of Socialist Realist music in Hungary meant, in practical terms, that many of his works were banned. By the fifth anniversary of Bartók's death in August of 1950, Hungarian Radio had developed an official list of banned works, which included *The Miraculous Mandarin*, the two piano concertos, the Third, Fourth and Fifth String Quartets and the *Concerto for Two Pianos and Percussion*. The unofficial ban extended to many more works, such as *Music for Strings, Percussion and Celesta*, *Bluebeard's Castle*, *Cantata profana*, the Second String Quartet, and many of the song settings, among others.[30]

It is impossible to say for certain what kind of psychological effect this public debate and ultimate censure of Bartók's *œuvre* had on Ligeti, but from his scattered writings on the period, we can gather that it was traumatic. The Hungarians' collective expectations for artistic renewal were vested almost entirely in Bartók after the war, which held true for Ligeti as well:

> The actual aim of our pilgrimage was, however, not so much the College [of Music in Budapest] itself as the person of Béla Bartók, who was expected back

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[29] Géza Losonczy, "Az Operaház legyen a népé!" (Let the Opera House be the people's!), *Szabad nép* (*Free Folk*) 5 (Feb. 1950): 10. Quoted and translated by Fosler-Lussier, *Music Divided*, 54.

[30] Fosler-Lussier, "Bartók Reception in Cold-War Europe," *Cambridge Companion to Bartók*, ed. Amanda Bayley (Cambridge: Cambridge University Press, 2001), 210-11. See also a more detailed account of this process in Fosler-Lussier, *Music Divided*, 53-62. Fosler-Lussier writes that, "the gradual trend over the course of 1949 and 1950 toward the elimination of these works from the repertory may have been harder for casual radio listeners to discern than one might at first suspect. Although Bartók had performed his own and others' works on the radio often enough during the 1930s, his music had never constituted a large portion of broadcast programming. The absence of certain works from the radio may therefore have been noticeable only to those few dedicated fans who were actively seeking to hear the missing pieces" (54-55). In all likelihood, Ligeti would have counted among the 'dedicated fans' that would have been keenly aware of the censorship as it progressed.

> from New York in the autumn of 1945. He was to take up his position again not only as professor at the College of Music but also as the outstanding personality in Hungarian musical life. Although neither of us [Ligeti and Kurtág] had met him before, we admired him devotedly and could hardly wait for the day when we were to see and hear him in person. Our despair may be imagined when we saw the black flag flying over the College of Music on the day of our admission examination; on that day precisely, news had come that Bartók had died in New York, aged 64. Our joy at being admitted to the composition class was in this way overshadowed by the pain of *the irreparable loss of our spiritual father*[31] [Emphasis mine].

Ligeti's account is a vivid description of the dejection he and his colleagues felt over Bartók's death, though it is not entirely reliable; Bartók in fact died some weeks after Ligeti's entrance exam.[32] It is highly likely, though, that Ligeti did think of Bartók as a spiritual father—culturally speaking, many Hungarian people felt this way about Bartók.[33] Upon his death, however, Bartók the man could no longer serve as the living icon of Hungarian musical life. As Fosler-Lussier explains, "Because he was no longer present to speak for himself, others could and did represent him in whatever manner seemed expedient."[34] Consequently, his music was easily reappropriated as a pawn in the Cold War political drama that emerged in the post-war years.

The Party debates over Bartók's *œuvre* seem particularly traumatic for the Hungarian people since they were not only deprived of Bartók's leadership, for which they so deeply longed, but also of much of his music. As Ligeti recalls, the Party

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[31] Ligeti, "Meeting with Kurtág," 71.
[32] Beckles Willson, *Ligeti, Kurtág, and Hungarian Music*, 167. She speculates that Ligeti embellishes his commentary and creates myths because it is a useful tool for self-promotion: "self-exoticisation [is] a highly effective mask" (167). On this point, see also Charles Wilson, "György Ligeti and the Rhetoric of Autonomy," *Twentieth Century Music* 1/1 (2004): 5-28.
[33] Richard Toop, *György Ligeti* (London: Phaidon, 1999), 24-25; see also Toop's account of Ligeti's audition at the Academy and life in Budapest in the immediate post-war years (24-25) and Steinitz's account of the same (22-36).
[34] Fosler-Lussier, *Music Divided*, xiii.

basically made the prescription that, "as far as Bartók was concerned, only the folk-song works were allowed, as well as the first and sixth string quartets […] Bartók's times were other times, now is Socialism. Now one must follow the Socialist Realist regulations of Zhdanov. It was a strangely schizophrenic situation."[35] The Party's censure of much of Bartók's *œuvre* appears as his second death—the schizophrenic situation to which Ligeti refers. Furthermore, the label of Socialist Realism, and the artistic oppression that doctrine implied, sullied the "acceptable" Bartók works that remained available under the Communist regime. Ligeti must have been extremely frustrated by not being able to hear or study Bartók's "formalist" works, at least not in the depth that he desired.[36] This frustration would have been magnified by the Soviets' attempts to co-opt and suppress much of Bartók's *œuvre* and to remake him into an acceptable Socialist Realist model. Ligeti may have considered Bartók to be his spiritual father, but due to circumstances, Bartók became in some sense an absent father—he simply was not consistently available

[35] Ligeti, '*Träumen Sie im Farbe?' Ligeti im Gespräch mit Eckhard Roelcke* (Vienna: Paul Zsolnay, 2003), 67-69. "Von Bartók waren nur die Volksliedbearbeitungen erlaubt sowie das erste und sechste Streichquartett…Bartók's Zeiten waren andere Zeiten, jetzt ist Sozialismus. Jetzt muss man den sozialistisch-realistischen Vorschriften eines Schdanow folgen. Es war eine merkwürdig schizophrene Situation."

[36] The political 'thaw,' which lasted from Stalin's death in 1953 through the run-up to the Hungarian Revolution in 1956, improved the situation slightly. As Ligeti writes, "Sometime around 1954 the censure was gradually loosened, which was evidence of the precariousness of the Soviet political machine in the whole Eastern Bloc." It was during the initially 'free' period after the war and during the 'thaw' that Ligeti became acquainted with Lendvai's theories: "A book such as Lendvai's or the present Bartók compositions [under discussion in the article "Zur Bartók's Chromatik"] could not have appeared before 1955" (*Gesammelte Schriften* I, 301). Though the 'thaw' improved things slightly, Fosler-Lussier reminds us that the regime remained somewhat oppressive: "Since one could criticize the official dogma only when already tacitly permitted to do so, in periods of political upheaval dissent became a practice of testing the waters, taking smaller, then greater risks to determine more clearly where the boundary between the sayable and the unsayable lay" (*Music Divided*, 146). "Etwa ab 1954 aber lockerte sich die Zensur allmählich, was ein Indiz für die Unsicherheit der sowjetischen Politik im gesamten Ostblock war. Ein Buch wie das von Lendvai oder der vorliegende Bartók-Aufsatz hätten vor 1955 nicht erscheinen können."

to Ligeti and the Hungarian people in the roles that they had envisioned for him and his music in the early 1950s.

As in Hungary, the sentiment that the musical developments missed during the Nazi era must be recouped pervaded Western Europe.[37] Bartók's music, which was hardly heard at all in Germany during the 1930s and early 1940s, initially formed part of this re-discovery.[38] Ligeti's emigration to the West in late 1956 ostensibly should have allowed him to re-engage with the whole of Bartók's *œuvre*, listening, studying and writing as he wished. Yet the Cold War politics that dominated in Western Europe precluded such a wholesale reclamation of Bartók's works.[39] Amongst the Darmstadt school, Theodor Adorno and especially René Leibowitz established a climate of skepticism toward Bartók in the late 1940s, which set the stage for the younger avant-

[37] The Darmstadt summer courses were founded expressly to further this purpose; see Amy C. Beal, "Negotiating Cultural Allies: American Music in Darmstadt, 1946-1956," *Journal of the American Musicological Society* 53/1 (Spring 2000): 105-139; Beal, *New Music, New Allies* (Berkeley: University of California Press, 2006); Mark Carroll, *Music and Ideology in Cold War Europe* (Cambridge: Cambridge University Press, 2003); Hans Ulrich Engelmann, "Zur Genesis der 'Darmstadt Schule' (1946…)," *Von Kranichstein zur Gegenwart: 50 Jahre Darmstädter Ferienkurse* (Stuttgart: DACO Verlag, 1996), 50-54; Christopher Fox, "Music after Zero Hour," and "Darmstadt and the Insitutionalization of Modernism," *Contemporary Music Review* 26/1 (Feb. 2007): 5-24 and 115-124; M.J. Grant, *Serial Music, Serial Aesthetics* (Cambridge: Cambridge University Press, 2001); Walther Harth, "Musical Life in Germany Since the War," trans. Max Lowenthal, *Tempo* 16 (Summer 1950): 19-22, 25; Hanns-Werner Heister, ed., *Geschichte der Musik im 20. Jahrhundert: 1945-1975* (Laaber: Laaber-Verlag, 2005), 18-40; Everett Helm, "Notes From Abroad: Darmstadt Summer School for New Music," *Musical Times* 97/1363 (Sept. 1956): 490-491; Taruskin, *Oxford History of Western Music* V, 14-54.

[38] Fosler-Lussier, *Music Divided*, 28-50; M.J. Grant, *Serial Music, Serial Aesthetics*, 17-22 and 39-41; Friedemann Sallis, "The Reception of Béla Bartók's Music in Europe after 1945," *Settling New Scores*, ed. Felix Meyer (Mainz: Schott, 1998), 255-258.

[39] Taruskin, *Oxford History of Western Music* V, 19-20; for more on the way Cold War politics shaped the music that was heard and critical responses to it in West Germany and France, respectively, in the post-war years, see Beal, *New Music, New Allies* and Carroll, *Music and Ideology in Cold War Europe*.

garde composers' ambivalence toward Bartók in the 1950s and 60s.[40] Leibowitz and Adorno articulated their arguments against Bartók in musical terms, but their stance is reflective of the cultural politics of the time. In the immediate post-war years, the modernist aesthetic, especially as articulated through serial techniques, seemed imperative since it functioned transparently as an antidote to the suppression and censorship of both the Nazi era and the Soviet regime.[41] Bartók's return to tonality in his late works was particularly problematic for Leibowitz, Adorno and other avant-garde composers because his commitment to aesthetic progress and perhaps other types of freedom, even unconsciously, was in question.[42]

Leibowitz's infamous article, "Béla Bartók or the Possibility of Compromise in Contemporary Music" appeared in 1947.[43] In it, he weaves his critical analysis mainly around Bartók's six string quartets, with occasional forays into the *Sonatas for Violin and Piano* (1921-23), *Music for Strings, Percussion and Celesta* (1936), *Violin Concerto* (1937-38) and *Concerto for Orchestra* (1943). Leibowitz is initially tolerant of Bartók's first two string quartets, focusing on their promise and potential. He becomes more

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[40] Taruskin argues that Leibowitz's *Schoenberg et son école* (1946) and Adorno's *Philosophie der neuen Musik* (1949) did much to shape the early Darmstadt aesthetics, especially serialism; see *Oxford History of Western Music* V, 15-18.

[41] Adorno, *Introduction to the Sociology of Music*, trans. E. B. Ashton (New York: Seabury Press, 1976), 174-176; Fosler-Lussier, *Music Divided*, 30; Taruskin, *Oxford History of Western Music* V, 16-17, 37.

[42] Taruskin, *Oxford History of Western Music* V, 19. For more on Leibowitz's Sartre-inspired stance, in which he argues that musicians have a responsibility to take up a politically conscious, morally committed ideological position in their music, see Carroll, *Music and Ideology in Cold War Europe*, 116-131.

[43] René Leibowitz, "Béla Bartók, ou la possibilité du compromis dans la musique contemporaine," *Les temps modernes* 3/25 (Oct. 1947): 705-734. In German as "Béla Bartók oder Die Möglichkeit des Kompromisses in der zeitgenössischen Musik," trans. H. R. Zeller, *Musik-Konzepte* 22 (Munich: Edition Text + Kritik, 1983), 11-38; in English as "Béla Bartók or the Possibility of Compromise in Contemporary Music," anon. trans., *Transition Forty-Eight* 3 (1948): 92-123. I refer to the English translation in the following citations.

critical of the Third String Quartet, and by the time he discusses the Fourth String Quartet, his enthusiasm has completely disappeared. For Leibowitz, the Fourth String Quartet is both the culmination of Bartók's *œuvre* and the moment of his ultimate failure:

> Instead of persisting in the forward movement which his last work called for, instead of crossing over the threshold he had just reached into that half-discerned world which can only be approached in the state of anguish that accompanies absolute liberty and its implied responsibilities, instead of all this, Bartók chose a less praiseworthy path, which was the *path of compromise*.[44]

In musical terms, Leibowitz essentially argues that Bartók failed to fully embrace the chromatic potential suggested in his earlier music. Bartók's willingness to hang on to traditional forms and tonal idioms, particularly in his late works, was simply unforgivable—it demonstrated Bartók's lack of awareness of the historical moment, or worse yet, his inability or unwillingness to courageously pursue the aesthetic path that would lead forward. Leibowitz states that,

> Once launched on the path indicated it becomes clear that we must have sufficient courage to follow the problems encountered to their ultimate conclusions and give them the most radical solutions possible. It is the extent to which we either show absolute lucidity or retreat before our commitments that determines the purity or impurity of our creative activity.[45]

The implicit comparison with Schoenberg is unmistakable, especially given Leibowitz's championing of Schoenberg in the same period. In the closing paragraphs of the article, Leibowitz spells this out:

> Instead of continuing to act freely, as did Schoenberg and certain of his followers, through the choice of a frontal attack on this new world, the terrible responsibility of which would be assumed by himself alone, he [Bartók] preferred—through a

[44] Leibowitz, "Béla Bartók," 112. Emphasis Leibowitz.
[45] Leibowitz, "Béla Bartók," 120-121.

> sort of unconscious fear—to have recourse to worn-out values which he sought to render transcendent and immutable.[46]

Schoenberg reached the precipice and crossed over, while Bartók turned back, apparently unable to tolerate the "anguish that accompanies absolute liberty" from tonality.

For Adorno, too, Bartók's inability to break with the tonal system meant that he failed to grasp the historical necessity of committing to a consistently progressive musical aesthetic.[47] Adorno writes that Bartók's continued use of tonal idioms meant that his works appear as "[…] late, posthumous masterpieces, certainly, but domesticated, no longer heralds of the threateningly eruptive, the ungrasped. The development of his work has a peculiar retrospective effect."[48] Adorno follows Leibowitz in arguing that, despite some promise of progressive aesthetics at a superficial level, Bartók remained committed—problematically so—to tradition at a more profound level. As Adorno writes, "[U]nder the pressure of his origins and traditions—which in the end proved stronger than his creative achievements—he lost contact with all he had dared in his boldest work, the *Two Sonatas for Violin and Piano*."[49]

In the 1950s, the younger generation of avant-gardists softened Leibowitz's polemical tone toward Bartók, but retained Leibowitz's and Adorno's judgment that Bartók's music was, for the most part, obsolete and irrelevant. Stockhausen's 1951 *WDR*

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[46] Leibowitz, "Béla Bartók," 122.
[47] Adorno's public insinuations to this effect are subtle; see *Philosophy of New Music*, trans. Robert Hullot-Kentor (Minneapolis: University of Minnesota Press, 2006), 8, 176 n. 4. Fosler-Lussier has confirmed, through archival sources, that Adorno wrote privately to Leibowitz to express his agreement. *Music Divided*, 33, 181 n. 26.
[48] Adorno, "The Aging of the New Music," *Essays on Music*, ed. Richard Leppert (Berkeley: University of California Press, 2002): 184.
[49] Adorno, *Impromptus*, (Frankfurt am Main: Suhrkamp, 1968), 98-99; Quoted in János Breuer, "Adorno's Image of Bartók," *New Hungarian Quarterly* 22/81 (Spring 1981): 29.

broadcast drawn from his thesis on Bartók's *Sonata for Two Pianos and Percussion* is a case in point. While generally praising Bartók's rhythmic innovations, he suggests that Bartók's continued reliance on melody and traditional forms such as fugue means that he is an inappropriate musical model for the present.[50] Fosler-Lussier writes that "Bartók became for Stockhausen a composer of primarily historical merit, not to be emulated but to be understood as a precursor to more recent and more useful developments."[51] Boulez apparently felt the same way:

> Undeniably, Bartók belongs with the 'big five' of contemporary music, alongside Stravinsky, Webern, Schoenberg and Berg. Yet his work has neither the profound unity and novelty of Webern, nor the rigour and acuity of Schoenberg, nor the complexity of Berg, nor the vigourous but controlled dynamism of Stravinsky.[52]

If Bartók was tolerable, he certainly was not an idol; in fact, Boulez scoffs, "[…] he has become the standard-bearer for the 'reasonable' avant-garde—the sort that has kept in touch with its public."[53]

As a further sign of Bartók's insignificance amongst the avant-garde, consider that his music failed to garner significant intellectual, analytical attention in the composition courses at Darmstadt after 1950.[54] When his music did appear at Darmstadt, it was in public concerts or master classes that emphasized performance techniques for

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[50] Stockhausen, "Bartók's *Sonata for Two Pianos and Percussion*," *The New Hungarian Quarterly* 11/40 (Winter 1970): 49-53. In German as "Bartók's Sonate für Zwei Klavier und Schlagzeug," *Texte* II, 136-139. Sallis suggests that Stockhausen's analysis fundamentally misunderstands Bartók due to his orientation toward serial technique ("The Reception of Béla Bartók's Music," 255). See also Fosler-Lussier's discussion of Maderna's and Stockhausen's early interactions with Bartók's music, which were ultimately rejected (*Music Divided*, 38-46).
[51] Fosler-Lussier, *Music Divided*, 46.
[52] Boulez, "Béla Bartók," *Stocktakings,* 242.
[53] Boulez, "Béla Bartók," *Stocktakings*, 241; on this point, see also Sallis, "The Reception of Béla Bartók's Music," 256.
[54] Fosler-Lussier, *Music Divided*, 47.

working musicians who would have been concertizing for the public. An average of two or three Bartók works were programmed per year at the *Ferienkurse* between 1946 and 1957, with larger showcases of Bartók's chamber works and piano works performed in 1950 and 1953, respectively.[55] The visibility of Bartók's music at the *Ferienkurse* drops off significantly after 1958, even in the concert and master class repertoire; Bartók's music rarely appears even on the concert programs.[56] For the younger generation of West European avant-garde composers, Bartók's music simply became irrelevant.

Symmetry and Octatonicism in the Introitus

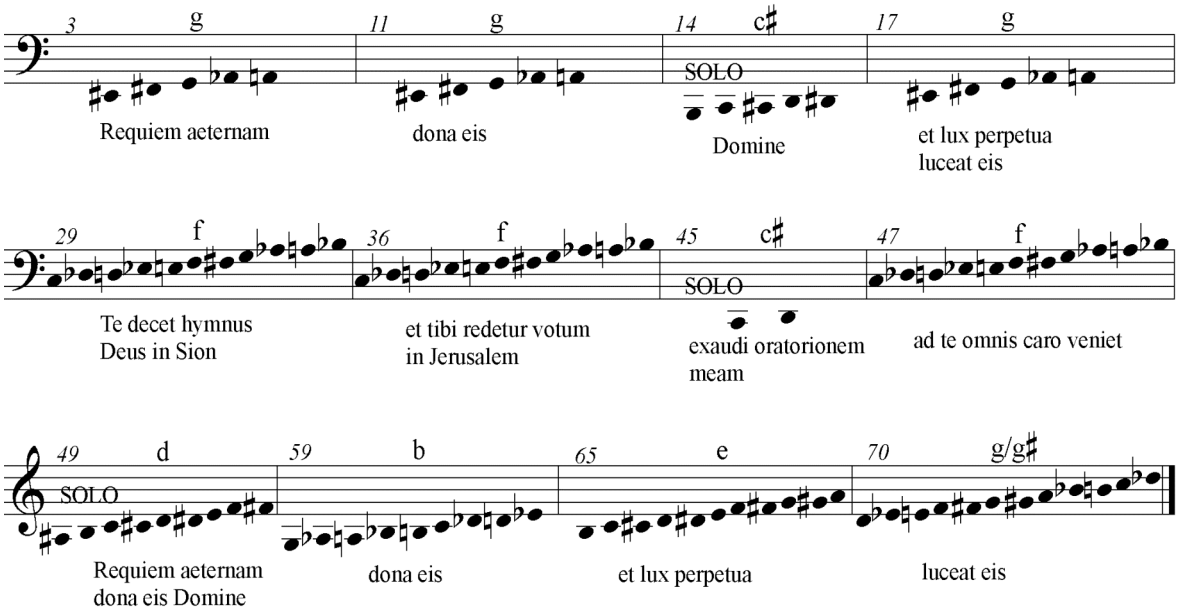
Given the complicated reception history of Bartók's music in both Hungary and the West, one can imagine why Ligeti too might have begun, by the later 1950s, to think of Bartók as an influence that needed to be transcended. Ligeti's self-professed "impulse to 'break with Bartók'"[57] is evident in as much as his post-emigration works make an obvious aesthetic break with the driving rhythms, meandering chromatic folk-like melodies, open fifths, imitative textures and traditional forms found in Ligeti's early works such as *Musica Ricercata* (1951-53) and *Metamorphoses Nocturnes* (1953-54).[58] It is certainly true that some of these features—complex rhythms, meandering chromatic

[55] Gianmario Borio and Hermann Danuser, eds., *Im Zenit der Moderne* Vol. III, (Freiburg im Breisgau: Rombach, 1997), 513-588.
[56] Borio and Danuser, eds., *Im Zenit der Moderne* III, 589-640. Bartók's *Third Piano Concerto* and *Violin Sontata* appeared in performance competitions in 1958 and 1962, respectively.
[57] Ligeti, *Ligeti in Conversation with Péter Várnai, Josef Häusler, Claude Samuel and Himself* (London: Eulenberg, 1983), 13.
[58] For an intensive study of Bartók's influence over Ligeti's early period, see Sallis, *An Introduction to the Early Works*. Sallis writes, "As one would expect, Bartók's influence looms large within this repertoire. The German term 'gründliche Auseinandersetzung' (roughly translated as 'fundamental examination') aptly describes Ligeti's relationship with Bartók's legacy as exemplified in these works" (11).

melodies and imitative textures—continue to appear in Ligeti's post-1956 works, and in fact feature prominently in the micropolyphony which is often thought of as one of the hallmarks of Ligeti's "mature" style. The difference is that, in the early works, the Bartókian aesthetic is prominent, almost to the point of being self-evident; in the post-1956 works, the Bartókian influences are much more abstracted, often subsumed beneath the texture and color of the sound-mass as a whole. Likewise, Bartók's musical influence is held away from the surface in the Introitus movement of the *Requiem* (1963-65), though it remains present below the surface, structuring the unfolding of the movement from behind the scenes, as it were.

The opening movement of Ligeti's *Requiem* traces a slow, controlled path from the lower reaches of the bass range to its highest point in the female voices at the end of the movement. As Example 5.3 shows, each phrase of text is set within a specific ambitus in pitch space. These statements appear within a particular vocal group—basses, tenors, etc.—or, as the movement progresses, some combination of vocal groups. Though I represent them as clusters here, the pitches are presented in micropolyphony in the vocal groups; each vocal group is divided into four individual parts that embody Ligeti's characteristically irregular rhythms and weaving, chromatic lines. The few moments of solo singing—or, rather, duet singing—are notated on the example.[59]

[59] The vocal pitches of the "Domine" solo, which begins in m. 14, are augmented by the inclusion of the instrumental pitches here. Otherwise the sparse instrumental parts simply double vocal notes already sung and are thus included in the example by default.



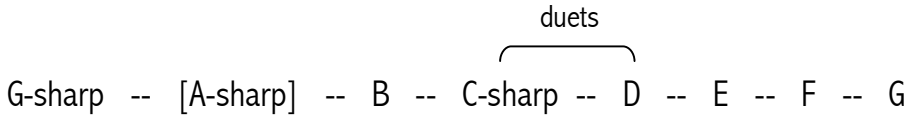
Example 5.3: Introitus in pitch space

Since the clusters are contained within definite ranges in pitch space, it is easy to determine the exact pitch that acts as the inversional balance point for each phrase of text (see Example 5.3). In so doing, one finds a remarkable similarity between the first and second stanzas: namely, that phrases 1, 2 and 4 of those stanzas share an ambitus and thus inversional center, and phrase 3 introduces the duet texture with the C-sharp center in both cases. In the third stanza, the harmonic motion picks up considerably, with each of the four phrases offering a different ambitus; hence the inversional center shifts from D to B to E and finally G/G-sharp. In reduction, the inversional centers might be assembled as they are in Example 5.4a. The second stanza duet stands as the only repetition (C-sharp), which seems justified since it appears with an obvious repetition of the low bass duet

texture. Ligeti also seems to appease a desire for closure, to some degree, in as much as the opening inversional pole G returns at the end, though this time pulled up a half step to include G and G-sharp.

G -- C-sharp -- F -- (C-sharp) -- D -- B -- E -- G/G-sharp

Example 5.4a: Reduction of inversional centers in Introitus



Example 5.4b: Inversional centers from Introitus arranged as octatonic scale

Arranged in a slightly different configuration, the inversional centers produce the majority of an octatonic segment—only A-sharp is missing (see Example 5.4b). Here, the poles of G and G-sharp are literally the ends of the segment; their appearance as the first and last inversional centers in the Introitus represents a closing of the octatonic circle and a joining of the starting point with the ending point (in pitch class space, at least). Since the octatonic scale is itself a symmetrical structure,[60] the inversional centers of the duets (C-sharp and D) are located, perhaps not coincidentally, at the center of this

[60] See Ligeti's description of Bartók's many ways of dividing the octave symmetrically in "Über Bartóks Harmonik," *Gesammelte Schriften* I, 302-308. He focuses on the symmetry of octatonic segments on pp. 306-07, in a discussion of the example from *Mikrokosmos* No. 109—incidentally, the same musical example he cites in the Darmstadt lecture.

octatonic scale. Structurally speaking, the duets function as the inversional balance center of the entire movement (in pitch class space, again).

Given the deliberate, continuously rising ambitus of the movement as a whole, scholars have often read the movement, as Richard Steinitz does, as "a gradual iridescent brightening out of darkness into light."[61] Text painting is important to this interpretation; one must be willing to take literally the last and highest phrase of text, "Et lux perpetua luceat eis" (Let perpetual light shine upon them). Along similar lines, since the duets stand out by way of textural contrast and also occupy the structural center for the work, it could be worthwhile to read the duet texts together—"Domine…exaudi oratorionem meam…requiem aeternam dona eis Domine" (Lord…hear my prayer…eternal rest grant unto them, O Lord). The duets form then, not only the structural center for the octatonic background of the work, but also the locus of spiritual, textual meaning in the movement. The genuine, persistent longing embodied in the duet texts provides a compelling emotional tableau for the movement and sets the tone for the *Requiem* as a whole.

A number of Bartókian features have appeared in the course of the analysis of the Introitus: the inversional centers of each phrase are apparent in pitch space; together these inversional centers produce an octatonic segment in pitch class space, itself a

[61] Richard Steinitz, *György Ligeti*, 145. See also Marina Lobanova, *György Ligeti: Style, Ideas, Poetics*, trans. Mark Shuttleworth (Berlin: Kuhn, 2002), 113. Erkki Salmenhaara, *Das Musikalische Material und seine Behandlung in Werken György Ligeti* (Regensburg, Bosse: 1969), 145-151; Ulrich Dibelius, *György Ligeti: Eine Monographie in Essays* (Mainz: Schott, 1994), 89. These readings echo Ligeti's statements about the work almost exactly; see Ligeti, "Zum *Requiem*," *Gesammelte Schriften* II, 228-232, esp. 229.

symmetrical structure.[62] Ligeti adds an additional layer of reference by making the duet texts the center of both structural and spiritual realms of the movement. Yet, it is fair to say that these so-called Bartókian features are rather buried beneath the micropolyphonic textures and the gradual upward trend of the clusters that monopolize our perception during the movement. The octatonic segment, which I argue forms the structural background of the movement, is hardly an obvious or perceptible entity; it is only available due to a series of abstractions away from the surface polyphony and rising tessitura of the movement. In the movement, we find then not only the Bartókian features of inversional centers, which together produce an octatonic scale, but also the sublimation of these features into the structural background.

This burying of Bartók's influence beneath the surface of the movement has much resonance with the political and cultural circumstances as well as Ligeti's statements from the period. On the one hand, Ligeti considered Bartók a "spiritual father," though, importantly a departed one. On the other hand, Ligeti also longed for a separation from Bartók's influence. As early as 1946, he wrote:

> We have one Bartók, and that is a lot. He is huge—abroad, they see only him. All others remain gray, indistinct as the houses in a distant city behind the solitary, looming tower. Nevertheless, there are a number of significant composers in Hungary. It would be easy for me to write about them, if letters were tones that could play their music. Writing, however, cannot be heard. How can I talk about their works if you have not heard them? Yet I must seek to do it anyhow.[63]

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[62] For another analysis that calls attention to the octatonicism of the movement, though in a different way than my analysis, see Pietro Cavallotti, "Il *Requiem* di György Ligeti," *Rivista Internazionale di Musica Sacra* 20 (1999): 279-320, esp. 292-95.

[63] Ligeti, "Neue Musik aus Ungarn," *Gesammelte Schriften* I, 51. The text was not published (in *Melos*) until 1949. "Wir haben einen Bartók, und das ist viel. Er ist groß—das Ausland sieht nur ihn. Alle anderen

Ligeti's lament is strikingly forthright about the fact that Bartók's influence was a double-edged sword—it both led the way forward for the Hungarians in the immediate post-war years and simultaneously proved a crushing and inescapable weight. As important as Bartók clearly was to Ligeti's musical development, Ligeti remained ambivalent about him in some respects. By the time he immigrated to Austria in 1956, Ligeti was ripe for a new musical idol.

Webern, or A New Spiritual Father

While Bartók's music was used, sometimes unpredictably, as a pawn of Cold War politics in both Hungary and Western Europe, the reception of Webern's music was a far more straightforward reflection of those politics. Behind the Iron Curtain, Webern's *œuvre* was simply out of the question, an undeniably bourgeois, formalist art music that had to be suppressed. In the West, Webern quickly became the icon for the opposite interpretation—his music stood for the reclamation of independent, rigorous art music, which accorded with the goals of denazification.[64] As if the memory of the Nazi era was not enough to urge European composers and artists toward the formerly forbidden modernist track in the post-war years, the *Zhdanovshchina* made the modernist aesthetic seem obligatory. Just as the Soviets banned certain music that did not fit with the

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bleiben grau, verschwommen wie die Häuser einer fernen Stadt hinter dem einsam aufragenden Turm. Doch gibt es in Ungarn eine Anzahl bedeutender Komponisten. Es wäre mir leicht, über sie zu schreiben, wenn die Buchstaben Töne wären, die ihre Musik wiedergeben könnten. Dies Gedruckte aber bleibt stumm. Wie kann ich über ihre Werke sprechen, wenn ihr sie nie gehört habt? Und doch muss ich es irgendwie versuchen."

[64] Fosler-Lussier, *Music Divided*, 29.

aesthetic tenets of Socialist Realism, the United States engaged in deliberate Cold War propagandizing against Communism and Socialist Realism in West Germany, in part through their financial support for certain kinds of new music.[65] It is in this context that the often arcane, academic and "difficult" music of the Darmstadt composers should be understood.[66] The post-war avant-garde did not prioritize the ability to connect with audiences because writing music that seemed approachable, palatable or populist carried the wrong political connotations—one wanted to make clear that one was anti-Fascist and anti-Socialist Realism; that is, without the burden of the "compromise" that Bartók had made. The music of Webern fits nicely into this frame. Webern represented to the Darmstadt composers a transparently anti-Fascist music and "a universally valid style that steered clear of the nationalist and folksy implications of socialist realism."[67]

All of this is not to say that there were no musical reasons for the Darmstadt composers' idolization of Webern.[68] Certainly there were, but it is important to realize that these musical concerns may have appeared particularly relevant within the political climate of the post-war years. That is, the time was ripe for the Darmstadt composers to pursue such concerns, and it seems that Ligeti realized as much. After his emigration, Ligeti began producing radio broadcasts analyzing Webern's works for the *Westdeutscher Rundfunk* in Cologne as early as 1958; he wrote an eight-part series "Das Werk Anton Weberns" in 1960 for the *Bayerischen Rundfunks* and a ten-part series "Die

[65] Beal, *New Music, New Allies*, 8-51.
[66] Grant, *Serial Music*, 20-22; Beal, *New Music, New Allies*, 11-41.
[67] Fosler-Lussier, *Music Divided*, 38; Schoenberg's music served a similar function; see Carroll, *Music and Ideology in Cold War Europe*, 141.
[68] See Grant, *Serial Music*, 103-105.

Werke von Anton Webern" in 1963-64 for the *Südwestfunk Baden-Baden*.[69] He lectured at Darmstadt on Webern's music in 1959 and 1961 and from those lectures, published an extensive analysis of Webern's *Erster Kantate* Op. 29 in the *Darmstädter Beiträge* in 1960.[70] In short, Ligeti became an expert on Webern's music after his emigration.

Webern may have genuinely piqued Ligeti's interest, but there was also a certain level of acceptance that he stood to gain amongst his Darmstadt colleagues by quickly adopting Webern as his idol, too. The Boulez quotation used as an epigraph for this chapter gives the impression that, amongst the Darmstadt composers, engagement with Webern's music was imperative. Stockhausen, too, writes:

> One's mind runs back to the days when copies of Webern scores were handed from one to another, when a shared passion for this music caused friendships to be sealed […] After the war, one could only with difficulty hear the first concerts in which, here and there, in between marketable pieces, one of his short compositions was tucked away—at some exclusive music festival or every few months, late at night, on the radio. So far the situation has not basically changed.[71]

Ligeti may have found the camaraderie and acceptance of his colleagues indispensable during his tenuous first years in the West. His deep foray into the study of Webern's music was thus an expedient use of his time, given both the political situation and the personal capital he stood to gain.

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[69] Monika Lichtenfeld, "Editorische Vorbemerkungen," *Gesammelte Schriften* I, 325. The texts of all the broadcasts are found in the *Gesammelte Schriften* I, 326-412.

[70] The title of the 1959 Darmstadt lecture was "Form und Strukturprobleme bei Webern," and the title of the 1961 Darmstadt lecture was "Theoretische Konsequenzen der Webernschen Musik." Borio and Danuser, eds., *Im Zenit der Moderne* III, 596, 607. See also "Strukturen im chromatischen Raum: die Webern-Seminare von Pousseur und Ligeti," *Im Zenit der Moderne* I, 249-266. The article on Op. 29 is available in the *Darmstädter Beiträge* 3 or in the *Gesammelte Schriften* I, 395-412.

[71] Karlheinz Stockhausen, "For the 15th of September, 1955," *Die Reihe* 2, trans. Leo Black (Eng. ed., 1958): 37. Originally published in 1955.

By contrast, Ligeti's writings from the period show few attempts to re-introduce Bartók's music to the Darmstadt circle. After his emigration, he wrote only two radio broadcasts and an analysis of the Fifth String Quartet, which appeared as the preface to the Universal Edition score.[72] Ligeti rather tended to mention Bartók in connection with Webern, as in the 1959 Darmstadt lecture notes and the radio broadcast "Über Bartóks Harmonik," which have already been cited. Likewise, Ligeti brought Webern and Bartók together through their dual interest in symmetrical structures in the *Darmstädter Beiträge* article "Über die Harmonik in Weberns Erster Kantate" and the radio broadcast "Webern und die Zwölftonkomposition."[73]

Ligeti's linkage between Bartók and Webern, while unconventional, is a reflection of the political pressures of the time. Bartók was no longer an acceptable model for composition, but similar issues could be explored through study of Webern's music. In fact, the lecture notes, broadcasts and articles cited above suggest that Ligeti began exploring in Webern's music some of the symmetrical structures he knew to be important in Bartók's music. There is also evidence of this conceptual transfer from Bartók to Webern in the second movement of Ligeti's *Requiem*.

[72] "Bartók's *Mikrokosmos*" was prepared for the WDR in the late 1950s, while "Über Bartóks Harmonik" was prepared for the WDR in 1961. *Gesammelte Schriften* I, 318-21 and 302-07. "Bartóks Fünftes Streichquartett: Eine Analyse," *Gesammelte Schriften* I, 315-17.
[73] *Gesammelte Schriften* I, 395-412 and 358-363.

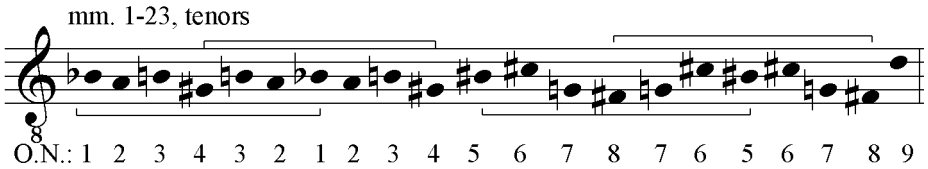
Symmetry and Serial Technique in the Kyrie

In the second movement of the *Requiem*, Ligeti simultaneously sets the phrases "Kyrie eleison" and "Christe eleison" in a densely woven micropolyphony. The tripartite form implied by the ABA text may be articulated perceptually more than structurally, in as much as the piece begins with the swell of the voices toward a climax in m. 52 and their quick retreat; has a calmer, softer, contrasting middle section dominated by the female voices and the "Christe eleison" text; and ends with a recapitulation of the opening gesture in terms of text, range, activity and dynamics.[74] As is typical of Ligeti's micropolyphony, each phrase of melody is set quasi-canonically using the same pitches but varied rhythms. The voice groups (soprano, mezzo-soprano, alto, tenor and bass) are each divided into four parts, which sing a rhythmically different version of the same melody. The micropolyphony of this movement takes on a particularly intense, persistent quality as the individual voices pile on top of one another to create a dense, buzzing, impenetrable texture. This density in texture is due to the tightly controlled ranges; chromatic, stepwise, meandering quality of the melodic lines; and the absence of rests in the melodies.[75]

The meandering quality of the melodic lines is not only a perceptual feature, but in fact a compositional technique: Ligeti literally meanders through the material of his

[74] See Jane Piper Clendinning, *Contrapuntal Techniques in the Music of György Ligeti* (Ph. D. Diss., Yale University, 1989), 126-139; Ulrich Dibelius, *György Ligeti*, 94; Eric Drott, "Lines, Masses and Micropolyphony: Ligeti's Kyrie and the 'Crisis of the Figure'," *Perspectives of New Music*, forthcoming.
[75] See Drott, "Lines, Masses and Micropolyphony," forthcoming. He also chronicles the critical reception and hermeneutic readings given the piece (which often invoke images of mobs, society and humanity) due to these qualities. For an earlier version of this work, see Drott, *Agency and Impersonality in the Music of György Ligeti* (Ph.D. Diss., Yale University, 2001), 151-200, esp. 153.

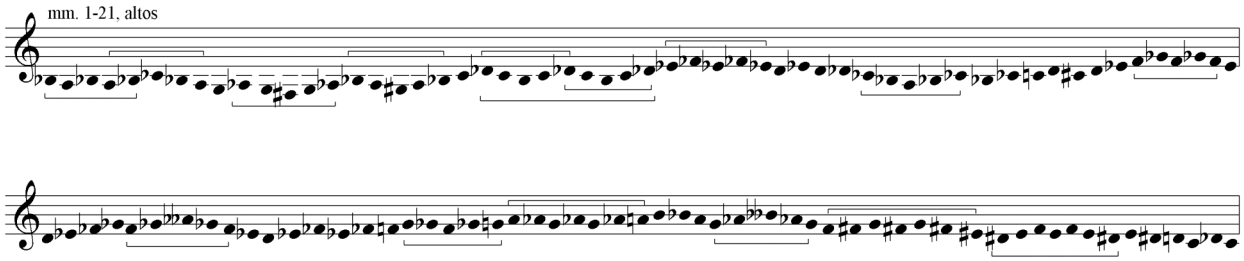
melodies by cycling back and forward through pitches already stated.[76] (All of the melodies in the movement are based on twelve-tone rows; I will have much more to say about this in a moment.) As the bracketed portions and pitch order numbers in Example 5.5 show, this creates a proliferation of palindromic segments in the melodies.[77] While Example 5.5 shows a melody set to the "Christe eleison" text, the same quality is apparent in the melody for the "Kyrie eleison" text as well (see Example 5.6; I only mark palindromic segments of five or more pitches here). The palindromic melodies are a sign that Bartók's presence in the *Requiem* has risen from the background, structural level where it had appeared in the first movement to a more audible, stylistic level in the second movement. For instance, notice the similarity between the contours of Ligeti's "Christe eleison" and "Kyrie eleison" melodies in Examples 5.5 and 5.6 and the (quasi) palindromic melodies that open Bartók's *Cantata profana* (1930) and *Music for Strings, Percussion and Celesta* (1936) shown in Example 5.7.



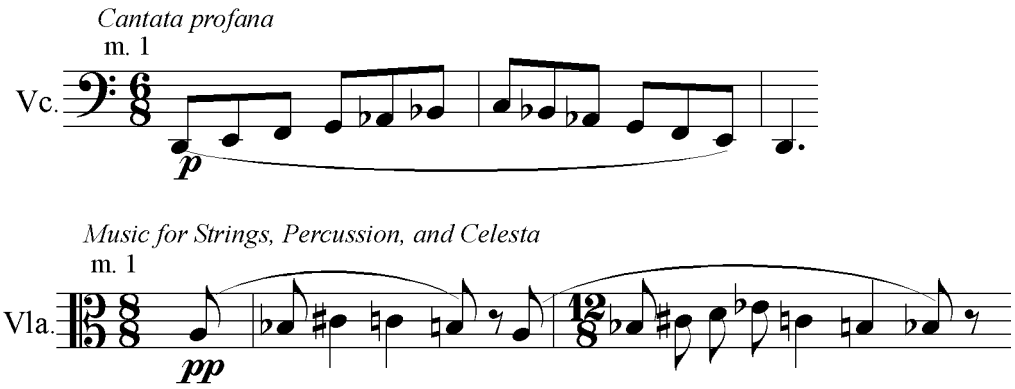
Example 5.5: Palindromic segments in "Christe eleison" melody due to cycling through first order numbers

[76] Drott, "Lines, Masses and Micropolyphony," forthcoming. See also Cavallotti "Il *Requiem* di György Ligeti," 308-10; Marina Lobanova *György Ligeti*, 120-23; Pierre Michel, *György Ligeti*, 2nd ed. (Paris: Minerve, 1995), 68-69.

[77] In the following examples, I presume the note is natural unless it is preceded immediately by an accidental. In his score, Ligeti tends to preface each note with a sign, but there simply was not enough space to carry out that notation here.



Example 5.6: Palindromic segments in "Kyrie eleison" melody

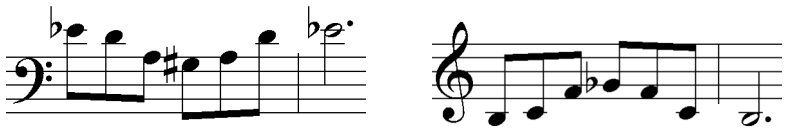


Example 5.7: (Quasi) palindromic melodies in Bartók's *Cantata profana* and *Music for Strings, Percussion and Celesta*

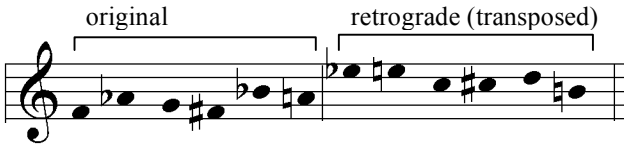
The surface presence of the palindrome figures in the "Kyrie" and "Christe" melodies seems clear evidence of Bartók's residual influence, in light of their similarities with Bartók's melodies; furthermore, recall that Ligeti specifically draws attention to the palindromes in Bartók's *Mikrokosmos* piece "From the Island of Bali" in his Darmstadt

lecture cited earlier (see Example 5.8). Ligeti was certainly attuned to the many instances of symmetrical structures of all sorts in Bartók's music, not in the least because of his engagement with Lendvai's work.[78] It is worthwhile to remember, though, that Ligeti related the palindromic figures from Bartók's *Mikrokosmos* to similar figures in Webern's Op. 21. In fact, in his Darmstadt lecture, Ligeti called attention to the fact that the second hexachord of Webern's Op. 21 second movement row is merely a transposed retrograde of the first hexachord (see Example 5.9). Thus the proliferation of palindromic segments in the Kyrie movement is also evidence Webern's influence on Ligeti. In fact, despite the superficial stylistic similarity between Ligeti and Bartók's meandering, palindromic melodies, Webern is the greater structural influence in the Kyrie movement. The rest of my analysis will aim to show that, despite the stylistic similarities with Bartók, the structure of this movement is actually deeply serial and informed by Ligeti's study of Webern's music.

[78] See in particular Ligeti, "Über Bartóks Harmonik," *Gesammelte Schriften* I, 302-308. In English, Lendvai's work is available in *Béla Bartók: An Analysis of His Music* (London: Kahn and Averill, 1971) and *Bartók's Style*, trans. Merrick and Pokoly (Budapest: Akkord, 1999). Contemporary analyses of Bartók have continued to emphasize symmetrical constructions; see for instance Elliott Antokoletz, *The Music of Béla Bartók* (Berkeley: University of California Press, 1984); Jonathan Bernard, "Space and Symmetry in Bartók," *Journal of Music Theory* 30/2 (Autumn 1986): 185-201; Edward Pearsall, "Symmetry and Goal-Directed Motion in Music by Béla Bartók and George Crumb," *Tempo* 58 (228): 32-40, among many others.



Example 5.8: Palindromic figures from Bartók, *Mikrokosmos* No. 109, after Ligeti's 1959 Darmstadt lecture notes



Example 5.9: Palindromic construction of row in Webern, Op. 21, second movement

As I noted in passing earlier, the underlying architecture of both the "Christe" and "Kyrie" melodies is based on twelve-tone rows. Ligeti's use of palindromes, created in part by his cycling forward and back through the rows underlying the melodies, obscures this fact somewhat, though. As Eric Drott observes, "Each time the melodic path doubles back on itself, the further the music as heard is removed from the underlying row. In other words, the greater the number of palindromic segments inserted into the Christe line, the more the row structure is transformed from an audible presence on the musical surface into a background generator of pitch material."[79]

[79] Drott, "Lines, Masses and Micropolyphony," forthcoming.

Ligeti, self-professed skeptic of integral serialism,[80] probably did not object to this obfuscation of the serial foundation of the melodies. Ligeti's palindromes function to conceal the twelve-tone raw material, but more importantly, provide a way of working out the raw material that might have seemed more like composition to Ligeti, and less like feeding notes through a meat grinder, as it were.[81] As Edward Pearsall has observed, "Symmetry may constitute an important source of compositional material, but it does not by itself convey process."[82] What is remarkable about Ligeti's palindromic, symmetrical cycling motions, then, is that they are not merely stylistic features, but in fact provide the primary process for working through the twelve-tone raw material during the "Christe eleison" phrases.[83] Example 5.5 showed a cycling through the first order numbers of the row; a similar process governs the "Christe" statement in the altos (mm. 23-55). Example 5.10 shows Ligeti's cycling through the last order numbers of the row, the size of the palindromic segments ever shrinking; the same process likewise governs four other statements: mezzo-sopranos (mm. 60-83), sopranos (mm. 61-77), basses (mm. 82-92) and tenors (mm. 83-88). Example 5.11 shows Ligeti's use of the simplest of all palindromes

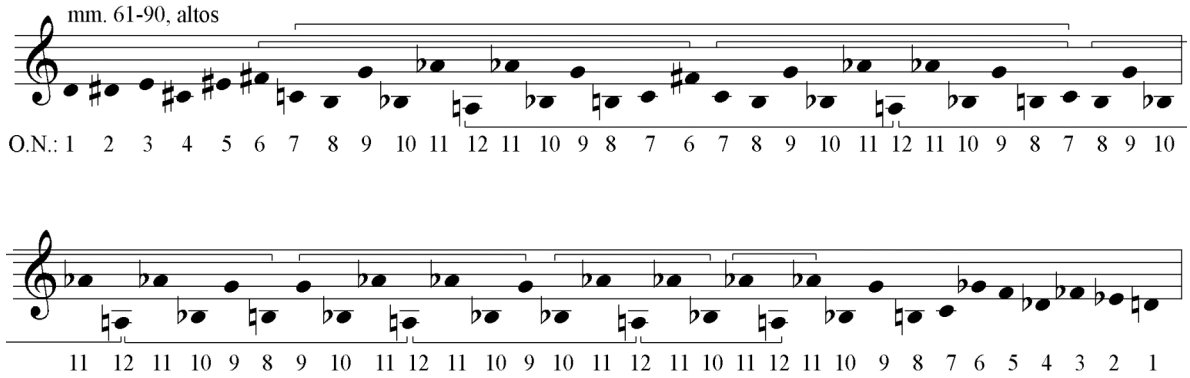
[80] "It never occurred to me, for instance, to join the 'official' serialists of Darmstadt-Cologne. I dislike the idea of being a member of a clique" *Ligeti in Conversation* (29). This kind of statement appears frequently in Ligeti's interviews. For a thoughtful analysis of Ligeti's self-professed independence from trends such as serialism, see Wilson, "Rhetoric of Autonomy," 5-28.

[81] Ligeti famously criticized Boulez's *Structures Ia* along these lines: the strict serial procedures in the work amount to a "self-limitation from choice—as if the composer is taking himself for a walk on the end of a lead" (62). Ligeti says, "you stand before a row of automata, and are free to choose which one to throw into; but at the same time you are compelled to choose one of them; you build your own prison as you please, and once safely inside you are again free to do as you please" (36). "Pierre Boulez: Decision and Automatism in *Structure Ia*," trans. Leo Black, *Die Reihe* 4 (Eng. ed., 1960): 36-62. Ligeti pursues this argument in "Metamorphoses of Musical Form," trans. Cornelius Cardew, *Die Reihe* 7 (Eng. ed., 1965): 5-19. "Total consistent application of the serial principle negates, in the end, serialism itself" (10).

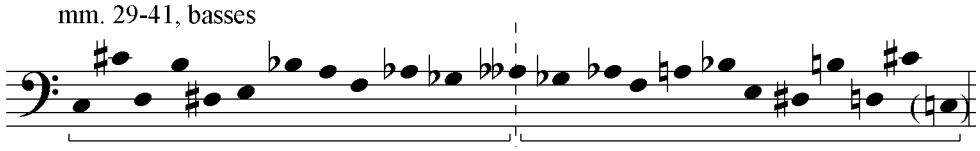
[82] Pearsall, "Symmetry and Goal-Directed Motion," 33.

[83] Drott, "Lines, Masses and Micropolyphony," forthcoming.

(and the most akin to Webern's precedent)—a simple statement and its retrograde, which also governs the "Christe" statement in the mezzo-sopranos (mm. 13-28).



Example 5.10: Palindromic segments in "Christe eleison" melody created by cycling through last order numbers



Example 5.11: Palindromic segments in "Christe eleison" melody due to simple retrograde of the statement

The "Kyrie eleison" melody is less obviously derived from an underlying twelve-tone row than the "Christie eleison" melodies, though I will demonstrate below that the pitch material for the "Kyrie eleison" melody is also in fact serial. Each statement of the

"Kyrie eleison" melody does, however, demonstrates a fairly obvious connection to serial technique, since all statements of this text are set to either transpositions or inversions of the first iteration of the melody (see Example 5.12).[84] Likewise, the "Christe eleison" melodies are all related by one of the serial operations—transposition, inversion, retrograde or retrograde inversion—though the situation is more complicated here by the cycling back and forth through order numbers instead of the simple, direct transposition of the same melodic profile as in the "Kyrie eleison" phrases (see Example 5.13).

voice	measures	text	starting pitch	row form
Alto	1-21	Kyrie eleison	B-flat	P_0
Bass	7-28	Kyrie eleison	A	I_{11}
Soprano	18-39	Kyrie eleison	B	I_1
Tenor	25-45	Kyrie eleison	F-sharp	P_8
Mezzo-soprano	33-55	Kyrie eleison	C-sharp	P_3
Bass	44-64	Kyrie eleison	D	P_4
Tenor	45-66	Kyrie eleison	E	I_6
Soprano	79-100	Kyrie eleison	G	P_9
Mezzo-soprano	86-108	Kyrie eleison	C	I_2
Tenor	89-111	Kyrie eleison	A-flat	P_{10}
Alto	91-111	Kyrie eleison	B-flat	I_0
Bass	94-117	Kyrie eleison	A	P_{11}

Example 5.12: Transposition and inversion relationships of "Kyrie eleison" phrases

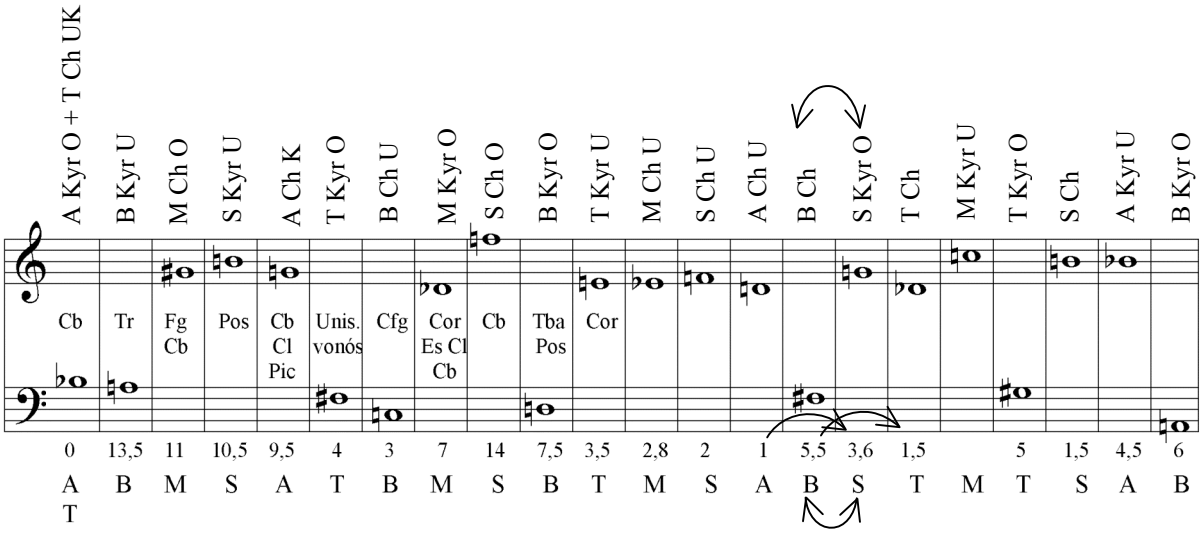
[84] Drott, "Lines, Masses and Micropolyphony," forthcoming; Steinitz, *György Ligeti*, 116; Lobanova, *György Ligeti*, 120.

voice	measures	text	starting pitch	row form
Tenor	1-23	Christe eleison	B-flat	from RI_5
Mezzo-soprano	13-28	Christe eleison	A-flat	from P_{10} and R_{10}
Alto	23-55	Christe eleison	G	from R_4
Bass	29-41	Christe eleison	C	I_2 and RI_2
Soprano	40-52	Christe eleison	F	P_7
Mezzo-soprano	60-83	Christe e-	D-sharp	from I_5
Soprano	61-77	Christe e-	F	from I_7
Alto	61-90	Christe eleison	D	from I_4
Bass	82-92	Christe e-	G-flat	from P_8
Tenor	83-88	Christe e-	D-flat	from R_{10}
Soprano	102-108	Christe eleison	B	RI_6

Example 5.13: Serial relationships between "Christe eleison" phrases

As quite a few theorists have noted, the starting pitches of the first twelve vocal entries of the movement (both "Kyrie" and "Christe" texts together) produce a twelve-tone row, as do the last twelve entries.[85] Jonathan Bernard has described this relationship most clearly, using Ligeti's sketches for the movement to show that a twelve-tone series, overlapped with its retrograde inversion, indeed dictates the pitch level of each entry.[86] The pitches E and E-flat function as both the final two pitches of the prime form of the row (P_0) and the first two pitches of the retrograde inversion form of the row (RI_{11}). I reproduce Ligeti's sketch below.[87]

[85] Amy Bauer, *Compositional Process and Parody in the Music of György Ligeti* (Ph.D. Dissertation, Yale University, 1997), 102-105; Cavallotti, "Il *Requiem* di György Ligeti," 305-308; Drott, "Lines, Masses and Micropolyphony," forthcoming; Lobanova, *György Ligeti*, 123; Salmenhaara, *Das Musikalische Material und seine Behandlung in den Werken von György Ligeti* (Regensburg: Bosse, 1969), 154.
[86] Jonathan Bernard, "A Key to Structure in the Kyrie of György Ligeti's *Requiem*," *Mitteilungen der Paul Sacher Stiftung* 16 (March 2003): 42-47.
[87] A facsimile of the sketch can be found in Bernard's article.



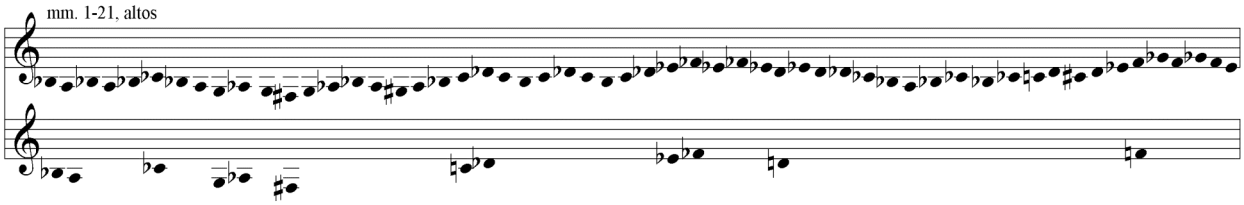
Example 5.14: Ligeti's master *Grundtypus* sketch for the Kyrie movement
György Ligeti Collection, Paul Sacher Foundation. Used by permission.

Below the staff, the capital letters indicate the voice that will enter on the given pitch. Above the staff, Ligeti's notations convey this information plus an indication of the text and the row form that will be used. For example, "A Kyr O + T Ch UK" means altos enter with the "Kyrie" text in its prime form shape and the tenors enter simultaneously with the "Christe" text, singing a melody derived from the retrograde inversion of the row.[88] The arrows show that Ligeti plans to deviate from the row plan and reverse the order of the bass and soprano entries at that point.[89]

[88] It is helpful to keep in mind that Ligeti's abbreviations are in German. Original Reihe (O) = prime; Umkehrung (U) = inversion; Krebs (K) = retrograde; Umkehrungkrebs (UK) = retrograde inversion.
[89] Ligeti keeps the F-sharp with the bass voices and the G with the soprano voices despite reversing the order of their entry. The instrumentation that accompanies the first eleven entries is notated between the staves; the numbers below the staves probably indicate a temporal scheme (Europeans tend to use commas rather than decimal points; read 13,5 as 13.5), though the significance of this temporal scheme is not entirely clear.

Following Bernard's lead, I will refer to this sketch and the prime row contained therein as the *Grundtypus* form of the row. This is because it is the foundation for all the melodies in the piece—it is from this *Grundtypus* row (P_0 = T 9 8 E 7 6 0 1 5 2 4 3) that all the "Christe eleison" melodies are derived (refer back to Example 5.13).[90] What has not yet been recognized in published analyses of the movement is that the "Kyrie eleison" melody is also derived from the *Grundtypus* form of the row. Example 5.15 shows the first statement of the "Kyrie eleison" melody. On the staff below the first half of the melody, I have shown the first occurrence of each new pitch class. Using this methodology, it is clear that a modified version of the *Grundtypus* row actually forms the foundation for the "Kyrie eleison" melody. As Example 5.16 shows, Ligeti modified the *Grundtypus* row by shifting pitch class 8 (G-sharp) two positions later, and by retrograding the final tetrachord. These modifications to the *Grundtypus* make the row underlying the "Kyrie" melody more stepwise, which fits more closely with the meandering surface character of the melody.

[90] See Bernard, "A Key to Structure"; Drott, "Lines, Masses and Micropolyphony"; Lobanova, *György Ligeti*, 120-123; Cavallotti, "Il *Requiem* di György Ligeti," 305-310.



Modified *Grundtypus row*: P_0

Example 5.15: "Kyrie eleison" melody and its derivation from the *Grundtypus* row

Grundtypus row	$P_0 = T\ 9\ 8\ E\ 7\ 6\ 0\ 1\ 5\ 2\ 4\ 3$
Modified *Grundtypus* row of "Kyrie eleison" melody	$P_0 = T\ 9\ E\ 7\ 8\ 6\ 0\ 1\ 3\ 4\ 2\ 5$

Example 5.16: *Grundtypus* row and its transformations into the "Kyrie eleison" foundation

Examining Ligeti's sketches offers some clues as to his progression toward using the modified *Grundtypus* row as the underlying structure for the "Kyrie eleison" melody. There are no less than seven drafts of the "Kyrie" melody in the *Requiem* folder of the György Ligeti collection at the Paul Sacher Foundation. (It is worth mentioning that this many drafts of a melody or section are atypical for Ligeti; most of his drafts, by the time they appear in musical notation, resemble the score greatly. Generally speaking, there is very little working through of the material in musical notation in Ligeti's sketches from the pre-1970 period.) Each draft indicates the melody in its original shape and leaves space for the inverted melody on the staff directly below; sometimes the inverted staves

are not filled in with pitches, indicating that Ligeti was apparently dissatisfied with the original melody and did not take the time to write out its inversion. Interestingly, the rhythm is the same in all the sketches for the "Kyrie eleison" melody—Ligeti decided on the rhythmic scheme much before he settled on the pitch scheme. Despite the similarities in the drafts (all exhibit the stepwise character of the final melody and all are built from an underlying twelve-tone row), Ligeti apparently struggled to settle on a pitch progression that would be suitable for the "Kyrie eleison" text.

Example 5.17 presents transcribed sketches of the "Kyrie eleison" row, derived using the same methodology as in Example 5.15. Though the drafts are unordered in the György Ligeti collection, it seems reasonable that they developed from simple to more complex in design. In what I propose is the first draft, the underlying row scheme is a simple descending fragment followed by an ascending fragment. In the second and third drafts, the wedge shape begins to emerge at the beginning of the row, and the underling row has more changes in direction, perhaps a reflection of the meandering surface of the "Kyrie" melodies. The fourth, fifth and sixth drafts settle more clearly into a wedge shape plus an ascending fragment at the end. The seventh and final draft finally resembles the score. The wedge shape is still apparent here, as is the ascending contour at the end, though Ligeti has sacrificed some of the stepwise continuity present in earlier drafts. Presumably, this is because he finally decided to use the *Grundtypus* row as the foundation, though modifying it slightly to emphasize the wedge shape and ascending stepwise motion contours as much as possible (refer back to Example 5.16).

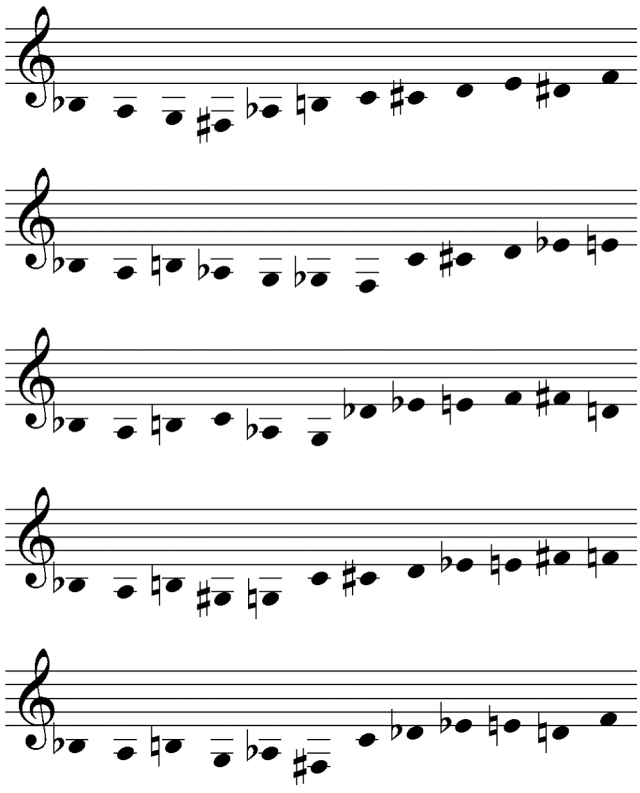
1st draft: descending and ascending fragments

2nd draft: wedge begins to emerge; length of descending and ascending fragments equalized

3rd draft: wedge begins to emerge more clearly; more changes in direction

4th, 5th, 6th drafts: wedge and ascending fragment

7th draft: wedge and ascending fragment from *Grundtypus* row; same as score



Example 5.17: Underlying row forms from the "Kyrie eleison" melody sketches

Though other scholars have noted that the Kyrie movement contains some serial features, it would be more accurate to say that the underlying structure of the movement is, in fact, deeply inspired by serial principles.[91] Ligeti's debt to serialism is acknowledged primarily through his use of the *Grundtypus* row as the sole foundation for

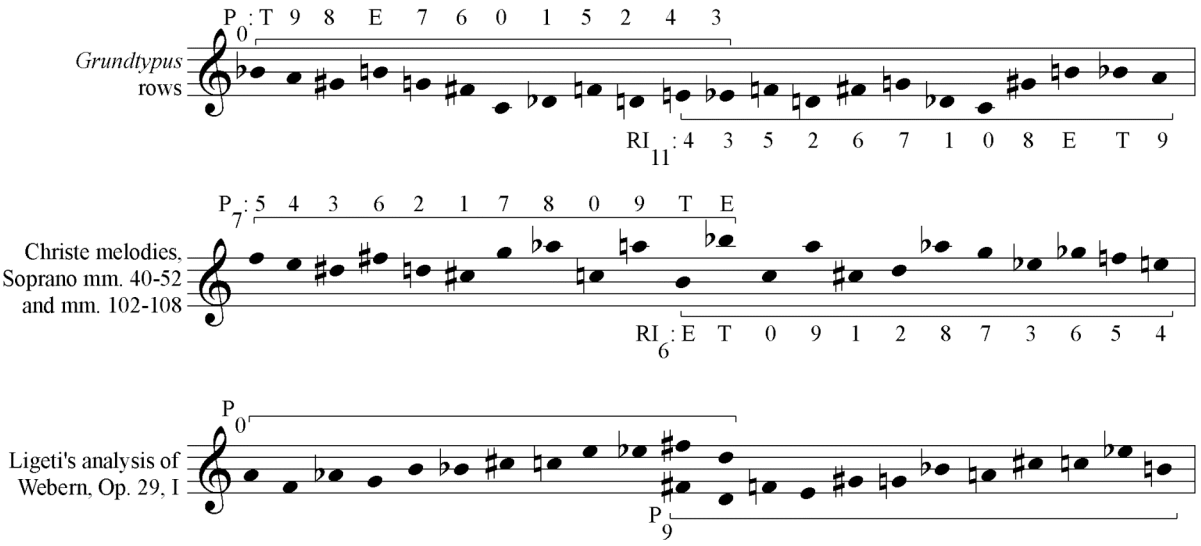
[91] Scholars have tended to shy away from a serialist reading of the movement as a whole, despite its serial features. As Lobanova says, "however, it is only possible to talk of the 'series' here to a limited extent" (*György Ligeti*, 120). Bernard says, "What is not controlled by serial principles in Ligeti's Kyrie—such as, for example, the voice leading for the Kyrie eleison melodies, discussion of the rules for which would require an article by itself—is of course at least as interesting as the features that are so controlled" ("A Key to Structure," 46). This reticence may be due to the fact that the full extent of the serial features has been gradually assembled over the course of about the last 10 years, and may also be due in part to scholars' acceptance of Ligeti's anti-serial clique statements in his commentary and interviews.

both the pitch material and formal organization of the movement. The "Kyrie" and "Christe" melodies are both derived from the *Grundtypus* row, and are both manipulated through traditional serial transformations. Likewise, the *Grundtypus* sketch shows that this material also organizes the work on a formal level by dictating the order of the voices' entries. The insertion of palindromic segments into the melodies of the movement, while complicating one's perception of the serial basis, is evidence of both Bartók and Webern's influence on Ligeti. Yet the underlying serial structure in the movement points strongly toward Webern as the primary symbolic influence over the movement. Along that line, there are two additional features to mention.

The first is that the only two statements of the "Christe eleison" melody that do not include internal palindromic segments (sopranos, mm. 40-52 and mm. 102-108) are actually, when taken together, a transposition of the *Grundtypus* row and its retrograde inversion (see Example 5.18).[92] Drott refers to these soprano entries as the "dual climaxes" of the movement; their perceptual salience is reinforced by their high register, angular contours and loud dynamics. He also suggests that the absence of internal palindromic symmetry in the two entries is structurally significant: "The melody in m. 102 acquires something of a syntactic function: by restoring the equilibrium that the asymmetrical soprano line had disrupted some fifty measures earlier, it closes a gesture that had been left hanging in suspense."[93] The soprano entrance in m. 102 provides closure for the earlier gesture in perceptual terms, but importantly, it completes the

[92] This fact is alluded to in Bernard, "A Key to Structure," 44.
[93] Drott, "Lines, Masses and Micropolyphony," forthcoming.

iteration of the transposed *Grundtypus* row, reaffirming the centrality of this scheme for organizing the movement.



Example 5.18: Connections between *Grundtypus* forms and Webern's Op. 29 row

This sort of commitment to a single generator of musical material for the movement is very much a Webernian idea—after all, the Darmstadt composers saw Webern as the immediate precursor to, if not the earliest exponent of, integral serialism.[94] The Darmstadt composers very much admired Webern's economy of means and his

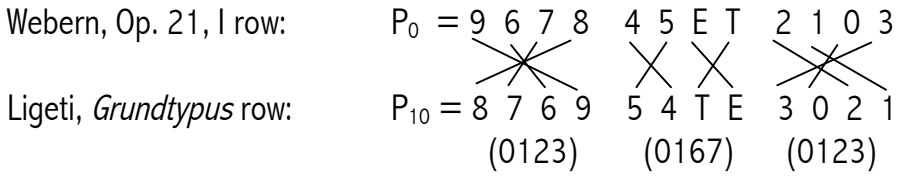
[94] Christian Wolff hints at this most clearly in his article about Webern's later works: "One may also extrapolate a suggestion of serial composition extended to duration, timbre and perhaps amplitude (as Stockhausen's analysis of the *Concerto for Nine Instruments* has shown)" (*Die Reihe* 2, 63). Boulez, Stockhausen, Nono, Pousseur and Eimert all make similar suggestions. See also Peter Andraschke, "Von Webern zu Schoenberg: Stockhausen und die Wiener Schule," *Beiträge zur Musikwissenschaft* 32/1 (1990): 38-41, esp. 39.

commitment to "Vielfalt in der Einheit"[95] [Diversity in Unity]. That Webern's middle and late period works often used a single row as a generator for much of the material of the movement was considered highly admirable. As Eimert writes, "[…] his [Webern's] mode of working is the exact opposite of total pre-determination; he does not raise patterned manipulation of material to an ideal but starts from the living seed, which contains all the possibilities that are to be made music, which controls and guides them and brings them to a wonderful florescence."[96]

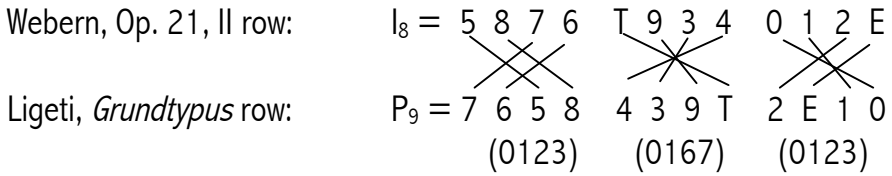
The second point that emphasizes Ligeti's engagement with Webern in this movement is that the *Grundtypus* row is actually quite similar to a number of Webernian rows. As Example 5.18 also shows, the way Ligeti overlaps the prime form with its retrograde inversion is quite similar to an analytical observation that he had made about Webern's Op. 29 in his *Darmstädter Beiträge* article from 1960.[97] Furthermore, a number of Webern rows, including those for the String Quartet Op. 28 and the *Variationen* Op. 30, are crafted from a prime-form hexachord and a retrograde inversion form of the hexachord (this will be discussed further in conjunction with Example 5.22). The similarity with Ligeti's process in the *Grundtypus* sketch is obvious, though Ligeti extends the prime/retrograde inversion relationship to the whole row rather than just the hexachords. Finally, as Pietro Cavallotti has suggested, Ligeti's *Grundtypus* row is quite

[95] Stockhausen, "Weberns *Konzert für Neun Instruments Op. 24*," *Texte* I, 26; Grant, *Serial Music*, 110-111.
[96] Eimert, "Interval Proportions," trans. Leo Black, *Die Reihe* 2 (Eng. ed., 1958): 99.
[97] Ligeti, "Über die Harmonik in Weberns Erster Kantate," *Gesammelte Schriften* I, 395-410; esp. 406-08.

similar to the Op. 21 first movement row (see Example 5.19a).[98] Perhaps an even better comparison exists between Ligeti's *Grundtypus* row and Webern's row from the second movement of Op. 21 (itself an inversion of the first movement row), which Ligeti had analyzed in the Darmstadt lecture notes (see Example 5.19b). The three tetrachords (also palindromic, as arranged in the row) further demonstrate the intervallic similarity between Webern's Op. 21 rows and Ligeti's *Grundtypus* row.[99]



Example 5.19a: Relationship between Webern's Op. 21, first movement row and Ligeti's *Grundtypus* row, after Cavallotti



Example 5.19b: Relationship between Webern's Op. 21, second movement row and Ligeti's *Grundtypus* row

[98] Cavallotti, "Il *Requiem* di György Ligeti," 306. Cavallotti also suggests that Ligeti's *Grundtypus* row is quite similar to Nono's row for *Il Canto Sospeso*.
[99] See Bauer, *Compositional Process and Parody*, 102.

Darmstadt and Symmetry

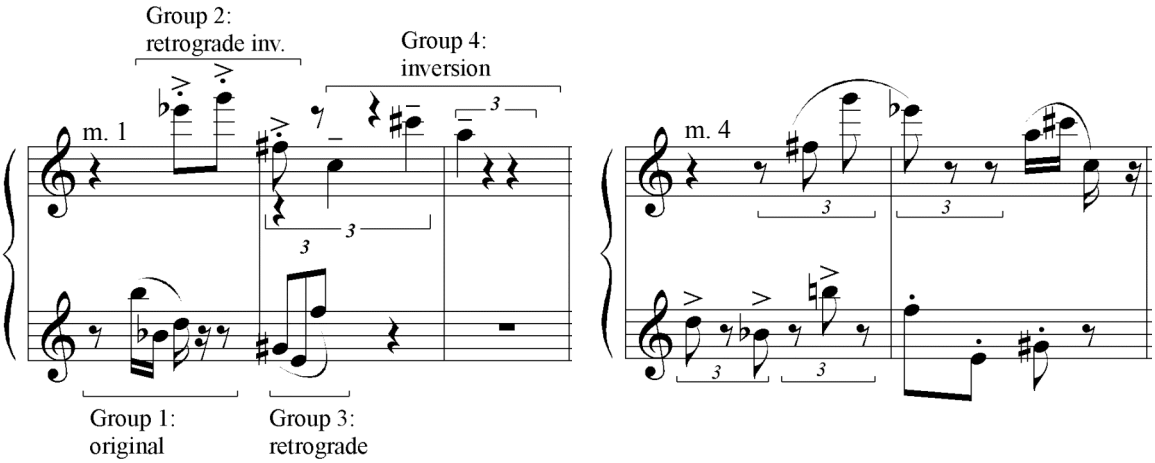
The extent to which Webernian techniques shape Ligeti's Kyrie may be initially surprising, especially given Ligeti's own disavowals of a connection to the serial style. In interviews, Ligeti frequently made comments like, "It never occurred to me, for instance, to join the 'official' serialists of Darmstadt-Cologne. I dislike the idea of being a member of a clique."[100] This kind of statement is misleading—whether deliberately so or not—in as much as it fails to acknowledge Ligeti's connection to his milieu.[101] That such serial features are to be found in Ligeti's *Requiem* is actually a sign of his engagement with the serialist discourse that had developed in the 1950s.[102] As is well known, Webern was an enormous influence on the younger generation of avant-garde composers who began to study at Darmstadt in the post-war years.[103] By examining the writings of Boulez, Stockhausen, Nono, Eimert and Pousseur that date from the period, one can establish that Webern's music was indeed a popular subject for analysis.[104]

[100] Ligeti, *Ligeti in Conversation*, 29.
[101] For more on this issue, see Charles Wilson, "György Ligeti and the Rhetoric of Autonomy," *Twentieth Century Music* 1/1 (2004): 9-12.
[102] A discussion of Ligeti's connection to serialism is found in Walter Frobenius, "György Ligeti und die Serialismus," *Zwischen Volks- und Kunstmusik: Aspekte der ungarischen Musik,* ed. Stefan Fricke (Saarbrücken: Pfau, 1999), 162-167.
[103] A good summary of Webern's legacy in the post-war years is Jonathan Bernard, "The Legacy of the Second Viennese School," *Schoenberg, Berg and Webern*, ed. Bryan Simms (Westport, CN: Greenwood, 1999), 315-383; see also Andraschke, "Stockhausen und die Wiener Schule," 38-40; Kathryn Bailey, "Coming of Age," *The Musical Times* 136/1834 (Dec. 1995): 644-649; Borio and Danuser, eds., *Im Zenit der Moderne* I, 213-266.
[104] For citations of these articles, see f.n. 4. For a discussion of the Darmstadt discourse surrounding Webern, see Grant, *Serial Music*, 105-120.

Furthermore, symmetry was one of the most frequently addressed topics in their analyses.[105]

Stockhausen's 1953 *Melos* article analyzing Webern's *Concerto for Nine Instruments* Op. 24 is an early example of this discourse.[106] In it, Stockhausen emphasizes first and foremost the symmetry inherent in the construction of the row (see Example 5.20). He argues that the symmetries found in the three-note shape motives of the row populate the composition—as Example 5.21 shows, the first two statements of the row ("periods," as Stockhausen calls them) exhibit mirror symmetries in the trichords as well as mirror symmetry in rhythm and articulation. Stockhausen's willingness to extend his analysis of symmetry to domains other than pitch suggests that he placed Webern first in the line of contributors to integral serialism. Moreover, symmetrical structures were one way of extending the organizational principle of the series to the whole composition.

[105] Grant, *Serial Music*, 118-120. The topic of symmetry was so important that Stockhausen, Eimert and others discussed quasi-symmetrical structures, arguing that they were a sign of Webern's organic handling of the musical material, in addition to truly symmetrical structures; see Stockhausen, "Structure and Experiential Time," and Eimert, "Interval Proportions," in *Die Reihe* 2, 64-74 and 93-99. Pousseur's *Die Reihe* 2 article is less concerned with symmetry but also falls in the 'organicist' vein.
[106] Stockhausen, "Webern's *Konzert*," *Texte* I, 24-31. Originally published in *Melos* 12/20 (Feb. 1953).



Example 5.20: Webern, Op. 24, periods 1 and 2, after Stockhausen

Period 1 (mm. 1-3):	E T 2 3 7 6 8 4 5 0 1 9
Period 2 (mm. 4-5):	2 T E 6 7 3 5 4 8 9 1 0
Period 1 (mm. 1-3):	
Period 2 (mm. 4-5):	
Period 1 (mm. 1-3):	legato staccato legato portato
Period 2 (mm. 4-5):	portato legato staccato legato

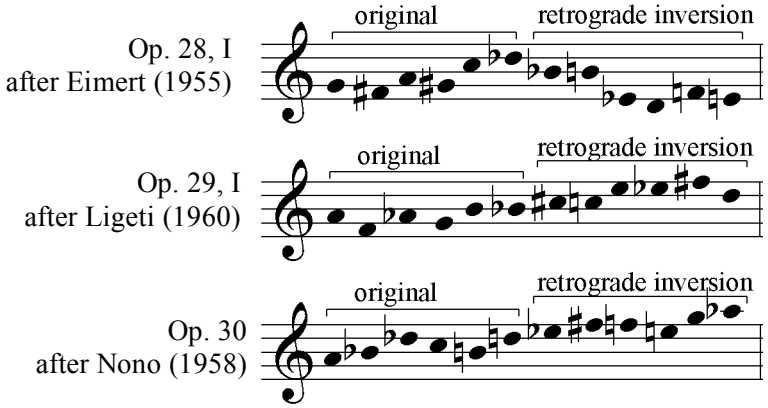
Example 5.21: Symmetry in pitch, rhythm and articulation in Op. 24, after Stockhausen

Just a few years later, Luigi Nono produced analyses that arrived at similar observations. In a 1956 analysis of Webern's Op. 21, Nono writes that the second hexachord is a retrograde of the first half and that "this way of building the row is typical of Webern's works."[107] From this mirror symmetry follows a number of consequences, which Ligeti also observes about the inverted row of the second movement in his Darmstadt lecture notes:[108] the retrograde of the row is the same as a transposition of the original, and the retrograde inversion of the row is the same as a transposition of the inversion. Said another way, the original and inverted rows cannot be retrograded; if they are, they simply reproduce a transposition of the original or inverted shape. Hence the four row forms are essentially reduced to two, which in addition are symmetrically related.

In his 1958 article on Webern's *Variationen* Op. 30, Nono observes a similar structure: in the original row, the second hexachord is the retrograde inversion of the first hexachord (see Example 5.22).[109] Consequently, the retrograde inversion row form is the same as the (transposed) original row, and the retrograde row form is the same as the (transposed) inverted row.[110] Like Stockhausen, Nono also hints at Webern's move

[107] Nono, "Zur Entwicklung der Serientechnik (1956)," *Texte*, 18. This text is available in the Italian collected works *Scritti e colloqui*, vol. I (Lucca: Ricordi, 2001), 9-14, though I refer to the German text here. "Diese Art der Reihenbildung ist für Weberns Schaffen typisch."
[108] It is not clear whether Ligeti knew Nono's article, which was originally published in the *Gravesaner Blätter* in May 1956. The article does not appear on Ligeti's bibliography for the Webern seminar (Ligeti collection, Paul Sacher Foundation) and he does not reference it in the lecture notes themselves. However, the fact that Ligeti speaks about the second movement of Op. 21 rather than the first may suggest that he was aware of Nono's analysis of the first movement and was avoiding a simple duplication of Nono's work.
[109] Nono, "Die Entwicklung der Reihentechnik (1958)," *Texte*, 21-33.
[110] Nono, "Die Entwicklung der Reihentechnik," *Texte*, 26-27.

toward integral serialism by noting that certain rhythmic motives are retrograded.[111] Eimert pursues the same type of observations in his *Die Reihe* article analyzing the first movement of Webern's String Quartet Op. 28.[112]



Example 5.22: Internal symmetries within various Webern rows

Ligeti's 1960 article analyzing Webern's Op. 29 explores many of the same issues that Stockhausen, Nono and Eimert had raised.[113] Ligeti shows how the row can be built out from the axis of symmetry, A/G-sharp, an observation he immediately ties to the axis A that forms the center of Bartók's *Music for Strings, Percussion, and Celesta*. As I noted above, Ligeti's willingness to link Webern and Bartók is seemingly without precedent, a mark of Ligeti's different heritage, but the majority of his Op. 29 analysis

[111] Nono, "Die Entwicklung der Reihentechnik," *Texte*, 29-30.
[112] Eimert, "Interval Proportions," *Die Reihe* 2, 93-99
[113] Ligeti, "Über die Harmonik in Weberns Erster Kantate," *Gesammelte Schriften* I, 395-410. See Christoph von Blumröder, "Ein weitverzweigtes Spinnennetz: Ligeti über Webern," *György Ligeti: Personalstil—Avantgardismus—Popularität* (Vienna: Universal Edition, 1987), 27-43. Ligeti also pursued similar issues as Pousseur raised in his 1957 Darmstadt seminar; see Borio and Danuser, eds., *Im Zenit der Moderne* I, 262-263.

follows more conventionally in the conceptual footsteps of his Darmstadt colleagues' writings on Webern. Like the Op. 28 and 30 rows, in Webern's *Erster Kantate* Op. 29 the second hexachord is the retrograde inversion of the first hexachord (see Ex. 5.22). Ligeti, citing Eimert's and Nono's analyses of Ops. 28 and 30, observes that this internal construction means that "[…] the inversion is the same as a tritone transposition of the retrograde."[114] Ligeti traces the consequences of this row construction exhaustively, noting that the horizontal and vertical symmetries found between the row and its inversion are reproduced in the rhythms, instrumentation and tension profiles of the vertical sonorities in Webern's homophonic setting.[115]

Stockhausen, Nono, Eimert and Ligeti's analyses follow up on an idea that Boulez had articulated as early as 1952: "The only one [of the Second Viennese School], in truth, who was conscious of a new dimension in sound, of the abolition of the horizontal-vertical opposition in favor of a view of the series as simply a way of giving structure—or so to speak, *texture*—to musical space, was Webern […]"[116] Boulez's focus on the "abolition of the horizontal-vertical opposition" is particularly relevant here since one of the ways of leveling out the musical surface is to invoke symmetrical structures. Ligeti, analyzing the dual horizontal and vertical symmetries contained in the chords of Webern's *Erster Kantate* Op. 29, understood this implication perfectly:

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[114] Ligeti, "Über die Harmonik in Weberns Erster Kantate," *Gesammelte Schriften* I, 401. "…Die Umkehrung dem mit einem Tritonus transponierten Krebs der Originalreihe gleich ist."
[115] Ligeti, "Über die Harmonik in Weberns Erster Kantate;" see also "Webern und die Auswirkungen seiner Musik auf die nachfolgende Komponistengeneration," and "Weberns komplexe Kompositionstechnik," *Gesammelte Schriften* I, 389-392 and 373-378.
[116] Boulez, "Possibly," *Stocktakings*, 114, emphasis Boulez; a similar statement appears in "Tendencies in Recent Music," *Stocktakings*, 175.

> The transfer of structural types—here of symmetries—from one dimension into another is akin to Webern's principle of equality of the horizontal and vertical directions in space: everything that was established as successive appears also as simultaneous and inverted.[117]

Ligeti takes this argument to its logical end in his famous "Metamorphoses of Musical Form" article, in which he argues that the equalization of the horizontal and vertical dimensions eventually results in a quasi-spatialization of musical form:

> Webern's music brought about the projection of the time-flow into an imaginary space by means of the interchangeability of the temporal directions, provoked by the constant reciprocity of the motivic shapes and their retrogrades (it seems here to be a matter of indifference which is regarded as the original shape) […] Webern's structures seem, if not to move forward in one direction, at least to circle continuously in their illusory space […][118]

Though "Metamorphoses" is famous for Ligeti's critique of serialism,[119] it is crucial to recognize that much of his argument about the spatialization of musical forms depends heavily on contemporary accounts of symmetry in Webern' music.[120] In his *tour de force* articles such as "Metamorphoses" and his analysis of Webern's *Erster Kantate*, Ligeti essentially summarizes and expands upon his colleagues' analyses of Webern's symmetrical structures; thus, these articles are best read in the context of the Webern reception summarized above. Ligeti provides cogent and compelling analyses that go further than other contemporary articles, but he develops ideas very closely related to the

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[117] Ligeti, "Webern's komplexe Kompositionstechnik," *Gesammelte Schriften* I, 374. "Die Übertragung von Konstruktionstypen—hier von Symmetrien—von einer Dimension in die andere entspricht Weberns Prinzip der Gleichberechtigung von horizontaler und vertikaler Richtung im Raum: Alles, was sukzessiv angelegt wird, erscheint auch simultan und umgekehrt."
[118] Ligeti, "Metamorphoses of Musical Form," trans. Cornelius Cardew, *Die Reihe* 7 (Eng. ed., 1965), 16.
[119] "'Serial Music' is doomed to the same fate as all previous sorts of music: at birth it already harboured the seeds of its own dissolution" ("Metamorphoses of Musical Form," 14).
[120] Blumröder, "Ligeti über Webern," 28-29; Wilson, "Rhetoric of Autonomy," 10-11.

discourse that had already been established, especially regarding the significance of symmetry in Webern's music, among the Darmstadt composers.[121]

Likewise, Ligeti's attempts to link Webern and Bartók's symmetry in his 1959 Darmstadt lecture or in his analysis of the *Erster Kantate* are much less startling when read in the context of the Darmstadt composers' emphasis on symmetry in Webern's music. To be sure, Ligeti's linking of Webern and Bartók is a mark of his personal interpretation of the music. But we should keep in mind that Ligeti introduced these observations to an audience that was ready to receive them. Bartók's music was perhaps unfamiliar or less important repertoire to his Western avant-garde colleagues, but Ligeti raised the same issues in his comparisons that the Darmstadt circle had been exploring for years in Webern's music.

In fact, Ligeti's recontextualization of Bartók's symmetrical structures as a parallel development to Webern's can be understood as a reflection of the historical, cultural and political situation in West Germany. It seems that Ligeti realized that his personal capital and reputation would not have been greatly helped by continuing to focus on Bartók after his emigration, since Bartók's music had fallen out of fashion with the Darmstadt clique. Instead, Ligeti quickly learned to recontextualize his analyses of Bartók's symmetry as parallel developments to Webern. In this way, he retained some of his personal and scholarly connection to Bartók's music, but presented it to his colleagues

[121] For a slightly different reading that emphasizes Ligeti's aesthetic divergence from the other Darmstadt composers, see Blumröder, "Ligeti über Webern," esp. 28-35. For a reading that emphasizes the continuity of Ligeti's thought between Hungary and the West, see Sallis, *An Introduction to the Early Works*, 212-217.

as an elaboration on the analytical issues they had been exploring with regard to Webern for years. Whether his Darmstadt colleagues felt hostile, ambivalent or receptive toward Bartók's music, Ligeti presented his Bartók observations in the disarming context of Webernian analysis.

That Ligeti changed his primary scholarly focus from Bartók to Webern after his emigration is also evidence of Ligeti's changing personal relationship with Bartók's music. As I noted earlier, Ligeti thought of Bartók both as a "spiritual father"[122] and simultaneously as someone on which "I could no longer model my work."[123] It stands to reason that, given the prominence of Bartók in the Hungarian musical imagination, it was difficult for Ligeti to abandon Bartók even as he realized this was a necessary step in his personal, compositional development and was practically mandated by the new cultural climate around Darmstadt. In this context, pursuing analyses of symmetry in Webern's music provided something of a safe-haven; Ligeti did not abandon the issues that Bartók's music had raised, but explored them in Webern's music instead. Webern became Ligeti's new object for analysis, and perhaps for compositional inspiration—yet Bartók's music continued to lurk in the shadows, present through his parallel exploitation of symmetry.

[122] Ligeti, "Meeting with Kurtág," 71.
[123] Ligeti, *Ligeti in Conversation*, 88.

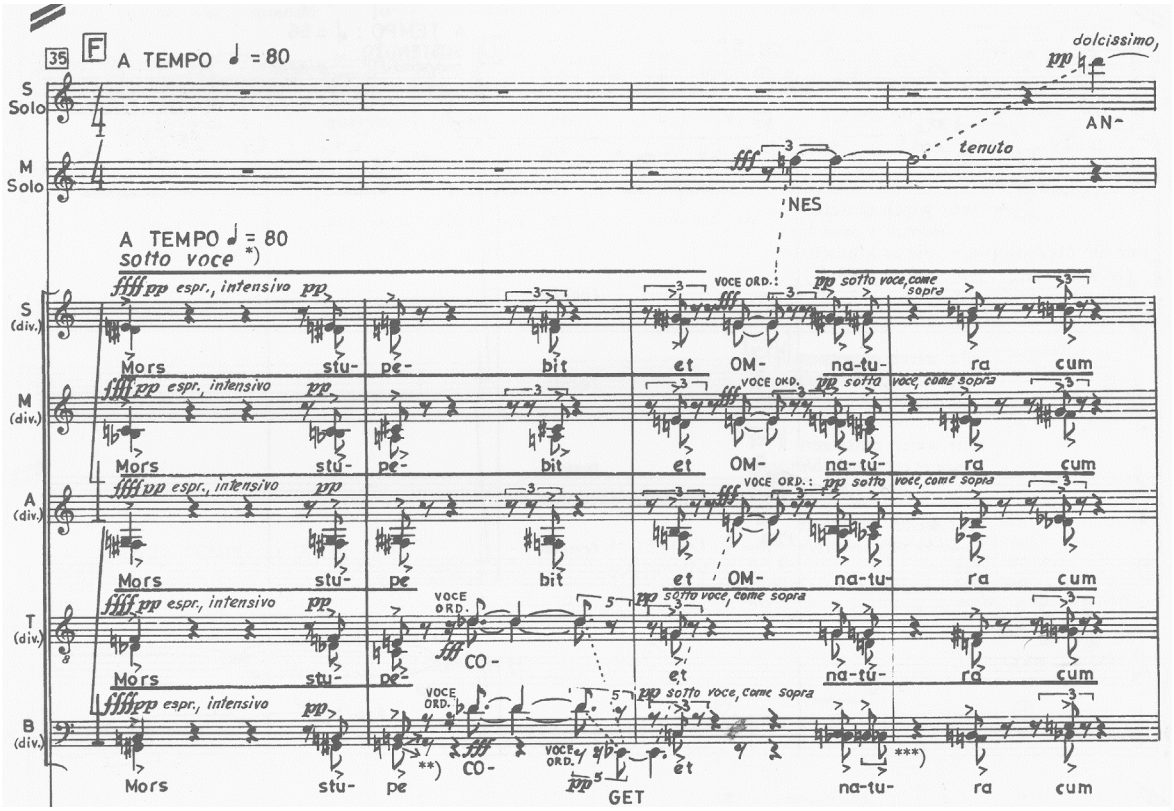
Bartók Transcended?

The musical language of the *Requiem* itself also provides mounting evidence that Webern replaced Bartók as Ligeti's musical father figure. Recall that after the sublimation of the Bartókian features of the first movement Introitus, Bartók's stylistic influence rose to the surface in the palindromes of the Kyrie movement. An analogous process takes place with respect to Webern, where his presence rises from the structural background of the Kyrie to the aesthetic foreground in the third movement, De die judicii sequentia. The movement's text is drawn from the "Dies irae" poem from the Requiem Mass—the first seventeen tercets are set in the De die judicii sequentia, while the last two tercets bracketed off and set separately in the fourth Lacrimosa movement. The De die judicii movement is chaotic, drawn in the hyper-expressionistic style that Ligeti had first used in *Aventures* (1962-65).[124] The voices leap in angular, rhythmically unpredictable contours, creating a cacophony of sound that is ameliorated only during the few homophonic choral sections, or when the mezzo and soprano soloists are left alone to occupy the entire texture. The third movement is almost completely lacking the perceptually salient features such as rising and falling dynamic arches and the occasional congealing of harmony that anchor even the dense, difficult Kyrie.

The hyper-expressionist style of the De die judicii became one of Ligeti's musical signatures, but this style can be profitably understood as an extension of Webern's aesthetics. For example, a type of *Klangfarbenmelodie* is embedded in the texture when

[124] Ligeti, "*Requiem* und anderes," *Gesammelte Schriften* II, 227; *Ligeti in Conversation*, 46; Lobanova, *György Ligeti*, 129-137; Steinitz, *György Ligeti*, 144-146; Toop, *György Ligeti*, 101-104.

a single phrase of text, here "coget omnes ante thronum," is passed between multiple voices (see Example 5.23).[125] Similar passages are found in *Aventures* and *Nouvelles aventures* (refer back to Example 4.12). As I argued in Chapter Four, these passages are deeply indebted to contemporary interpretations of Webernian *Klangfarbenmelodie*, which emphasized Webern's division of the melody or row by timbre as in his setting of the Bach *Ricercar*.



Example 5.23: De die judicii sequentia mm. 35-38, showing *Klangfarbenmelodie* "coget omnes" phrase embedded in texture

[125] Drott, *Agency and Impersonality*, 165-168.

The wide leaps in each voice in the De die judicii are also a mark of Ligeti's recourse to Webernian structure and aesthetics. Richard Toop writes that the vocal writing in the movement is something of a homage to Webern:

> The leaping lines typical of Webern's vocal writing are pushed here to an extreme—even more in the solo mezzo-soprano's part than in the chorus—and deliberately taken (almost) to the point of absurdity.[126]

That Ligeti's angular, leaping melodies relate structurally to Webern's music—particularly his vocal *Lieder* melodies—is clear from examining the contours of both (see Example 5.24). Ligeti also addressed this point in his article "Weberns Melodik":[127]

> In Webern's later works, this way of chromatically linking melodies gradually disappears. Intervals appear ever wider, and they finally become so dominant that the connections within the melodic lines appear to disintegrate.[128]

Unsurprisingly, Ligeti's analytical attention on the structural implications of Webern's wide-leaping melodies reflects the concerns of his milieu; a similar emphasis on Webern's large melodic intervals is a constant theme in the writings of the Darmstadt school, for example in Eimert and Pousseur's articles in the second volume of *Die Reihe*.[129]

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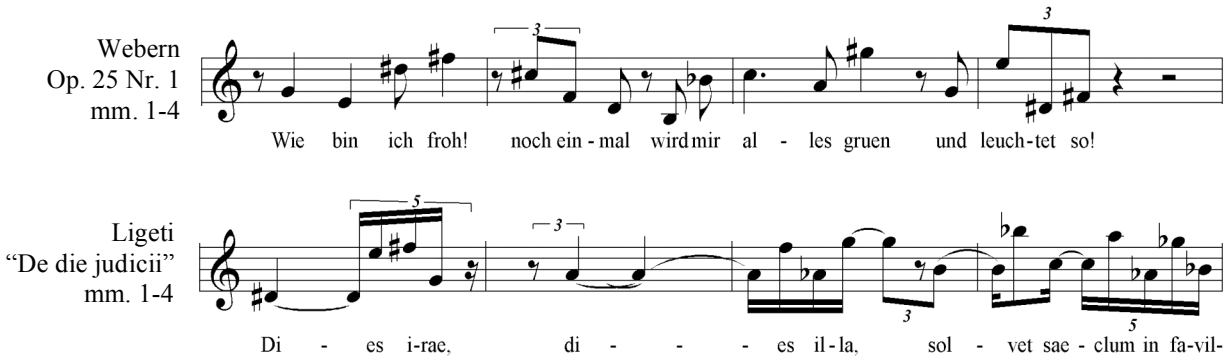
[126] Toop, *György Ligeti*, 104. See also Drott, *Agency and Impersonality*, 135, n. 17.
[127] Ligeti, "Weberns Melodik," *Gesammelte Schriften* I, 337-342.
[128] Ligeti, "Weberns Melodik," *Gesammelte Schriften* I, 337. "Im Weberns späterem Schaffen verschwindet diese Art chromatisch gebundener Melodik allmählich. Immer weiter gespannte Intervalle tauchen auf, und sie werden schließlich so dominierend, dass der innere Zusammenhang der melodischen Linien aufgehoben zu sein scheint."
[129] Eimert, "A Change of Focus" and Pousseur, "Webern's Organic Chromaticism," *Die Reihe* 2, 29-36 and 51-60.



Example 5.24: Similar contours and wide leaps in Webern and Ligeti's vocal lines

Like his colleagues, Ligeti furthermore writes that Webern's large melodic intervals permeate not only the structure of his works, but also the expressive dimension:

> The expanded intervals in Webern's melody and the incessant leaping of the voices from one register to another provide an extremely tense expressivity. It goes so far that they are divested of expression in their *habitus* and in a sense, are transformed into an agitated objectivity.[130]

Importantly, Ligeti draws a similar conclusion as to the aesthetic effects of his and Webern's use of large, hyper-expressive melodic leaps. He says:

> The idea of the Last Judgment was a constant preoccupation with me for many years, without any reference to religion. Its main features are the fear of death, the imagery of dreadful events and a way of cooling them, freezing them through alienation, which is the result of excessive expressiveness.[131]

[130] Ligeti, "Weberns Melodik," *Gesammelte Schriften* I, 341-342. "Die erweiterten Intervalle in Weberns Melodik und das ständige Springen der Singstimme von einem Register zum anderen provozieren eine äußerst gespannte Expressivität. Das geht so weit, dass der Ausdruck sich seines Habitus entäußert und in eine Art erregter Objektivität umschlägt."
[131] Ligeti, *Ligeti in Conversation*, 46.

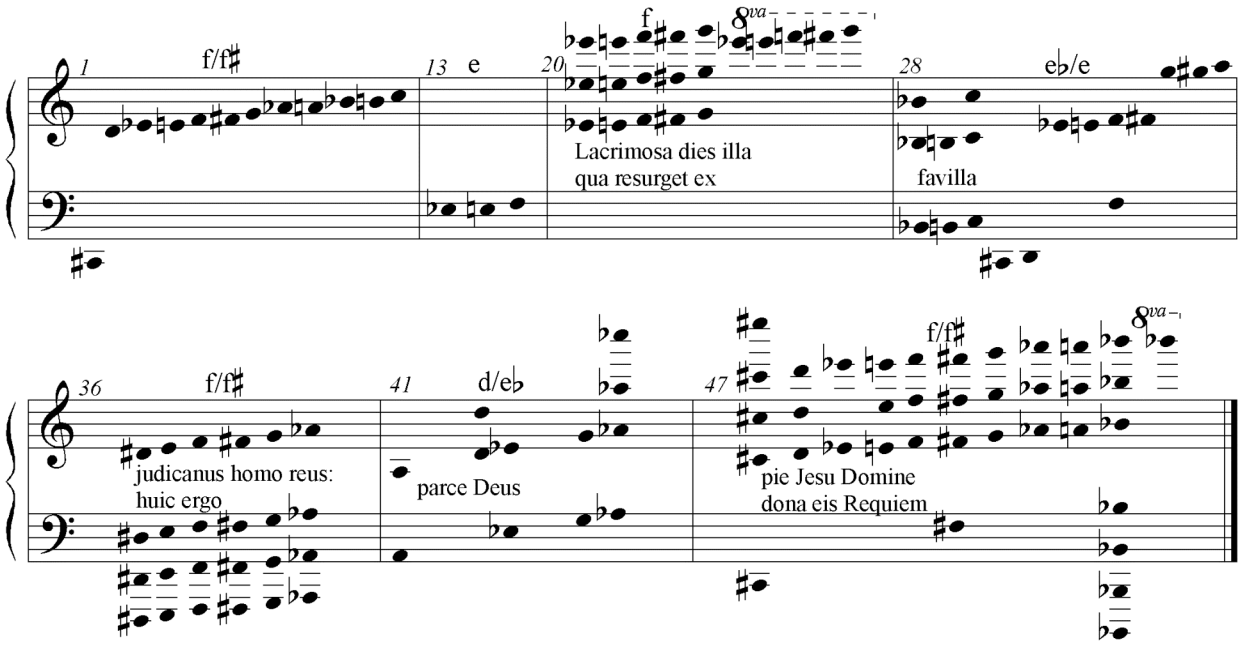
Ligeti's account of the aesthetics of the De die judicii nearly restates his observations about Webern's distended vocal lines: in Webern it results in an "agitated objectivity" and in his De die judicii, it leads to a cooled or frozen alienation.

If the embedded *Klangfarbenmelodie* and wide-ranging melodic contours are indeed evidence of Webern's continuing influence in the *Requiem*, even as they are used in the service of the hyper-expressive style that would become a trademark in Ligeti's vocal works, the fourth and final movement, Lacrimosa, provides fewer clues as to Ligeti's inspiration. Aesthetically, the Lacrimosa is a return to the quiet, cluster-laden sound of the first movement, providing contrast and a reprieve from the chaos of the Last Judgment depicted in the De die judicii sequentia. As Steinitz writes, "Although there is no exact reprise of early material, the Lacrimosa completes a powerfully expressive structural arch…"[132] Since it seems to close the piece with a gesture of return to the texture of the opening movement, it is reasonable to look once again for Bartók's influence in the background structure of the movement.[133]

As Example 5.25 shows, however, the structure of the clusters in the Lacrimosa is more complicated than the Introitus. Most obviously, the ambitus of each cluster is much more diffuse, sometimes spread over a number of octaves in the Lacrimosa. The instruments play a far greater role in the Lacrimosa, playing clusters of their own and often extending the range of a vocal cluster over a number of octaves by doubling. Whereas the tightly controlled registral bands of the Introitus made the determination of

[132] Steinitz, *György Ligeti*, 145.
[133] Ove Nordwall suggests that the flute music that opens the Lacrimosa refers to Bartók's 'Elegy' in the *Concerto for Orchestra* (*György Ligeti*, 31).

an inversional center in pitch space quite easy, one must use the abstraction of pitch-class space to discover inversional centers in the Lacrimosa. When assembled as a structural background, the inversional centers of the Lacrimosa result only in a chromatic cluster spanning D to F-sharp, instead of producing the octatonic background seen in the similar first movement (see Example 5.26).



Example 5.25: Reduction of Lacrimosa in pitch space

D -- E-flat -- E -- F -- F-sharp

Example 5.26: Reduction of inversional centers in Lacrimosa

The Introitus and Lacrimosa movements are stylistically similar, but the background structure of the Lacrimosa does not contain buried references to Bartók. In fact, the chromatic cluster that forms the background structure of the Lacrimosa points only toward Ligeti; clusters were, after all, his principal musical effect since at least *Apparitions* (1958-59) and probably earlier.[134] Ligeti was clearly aware of the implications of recalling, but not completely recapitulating the first movement: "Moments of the "Introitus" seem to be insinuated, though this is not an actual return but more of a *déjà-vu*: what was evoked is not present, so to speak; in appearing, it has at the same time passed."[135] Ligeti suggests that the gesture of return has been emptied in some way in the Lacrimosa, as if the returning clusters are signs without referents, merely a mirage that lacks true meaning or grounding. One way of interpreting this emptiness is to remember that the clusters of the fourth movement lack the reference to Bartók that the first movement clusters contained—in the Lacrimosa, the clusters have become self-referential. The cluster-laden background structure, along with the incomplete, ephemeral gesture of return, suggests that Ligeti turned inward in the Lacrimosa rather than grounding its structure in Webern or Bartók.

[134] The few fragmentary sketches for Ligeti's *Viziók*, which he considered an early version of *Apparitions* held in the György Ligeti Collection at the Paul Sacher Foundation confirm that he worked with clusters before his emigration. Furthermore, first piece from the vocal pair *Éjszaka, Reggel* (1955) reveals that Ligeti exploited canonic technique to build diatonic clusters. See Sallis, *An Introduction to the Early Works*, 168-193; Lobanova, *György Ligeti*, 27-28.

[135] Ligeti, "Zum *Requiem*," *Gesammelte Schriften* II, 231. "Momente des „Introitus" erscheinen angedeutet, doch ist dies keine tatsächliche Rückkehr, vielmehr ein Déjà-vu: Was evoziert wird, ist gleichsam nicht gegenwärtig, im Erscheinen zugleich vergangen."

The *Requiem* and Historical Memory

Ligeti's turn inward in the last movement of the *Requiem* deserves more elaboration. It would be remiss not to point out that the title, text and subject matter of the *Requiem* makes it much more specific, in terms of linguistic, stylistic and cultural referents, than all of his other works from the period. For example, *Apparitions* [Visions], *Atmosphères* [Atmospheres], *Aventures* [Adventures], and *Lontano* [Distance] offer rather vague titles that are indeed appropriate to Ligeti's abstract style. Ligeti's non-referential titles do reflect the trend of the day; consider that some of his colleagues' titles from the same period are *Structures* [Structures], *Éclat* [Brilliance], *Kontakte* [Contact], *Mixtur* [Mixture] and *Dimensioni* [Dimensions].[136] Most of the above titles refer to geometrical properties or processes that define musical space in a physical, architectural sense; they avoid overt reference to one's phenomenal experience of the world or to any literary or symbolic meanings that point outside of the musical work. Likewise, these titles are generically ambiguous, in as much as they do not imply either the form of the work (sonata, variations, etc.) or its instrumental forces (string quartet, cantata, *lieder*, orchestral pieces, etc.). The Darmstadt circle of composers tended to favor titles that reflected their concern with the structure and processes at play in the musical work itself, while deliberately avoiding titles that affirmed the formal and generic conventions that had held during the first half of the twentieth century and earlier. The titles used by the Darmstadt circle simultaneously sublimated the role of human perception and interaction

[136] Pierre Boulez composed *Structures* (1951-61) and *Éclat* (1965); Karlheinz Stockhausen composed *Kontakte* (1958-60) and *Mixtur* (1964-67); Bruno Maderna composed *Dimensioni* (1963-64). My thanks to Eric Drott for bringing these observations to my attention.

with the music, making their works seem self-referential—questions of the work's "meaning" could only be referred to the structure and processes unfolding in the piece itself.[137]

A *Requiem* setting appears, by contrast, both traditional and highly representational. It is immediately set apart from contemporary Darmstadt avant-garde pieces such as those mentioned above because the title itself implies that linguistic content and meaning are available. This is in sharp contrast to the proliferation of abstract titles that refer only to the structure and processes of the work itself. A *Requiem* setting furthermore makes contact with a genre and a historical lineage that has included famous settings by Ockeghem, Mozart, Verdi, Brahms, Britten and others. It suggests likely compositional choices—text, chorus, orchestral forces, and perhaps even performance venue—based on generic expectations. Moreover, a *Requiem* setting implies a context for the composition and reception of the work—namely that a memorial prayer is being offered up on behalf of a person or group of people. A *Requiem* raises the question: who is this work for? In Ligeti's case, a second question is raised: what are the implications of composing a *Requiem* in post-war Germany?

Though they seem like obvious questions, Ligeti avoided addressing these dimensions of the work as much as possible.[138] When he spoke about his *Requiem*, he

[137] Ligeti comes closest to affirming human interaction with the music with titles like "Visions" and "Adventures."

[138] Erkki Salmenhaara follows Ligeti in writing, "It [the *Requiem*] does not refer to the death of a specific person or to any tragic event, but instead, it should be mentioned, was written for the Jubilee of the Swedish radio concert series *Nutida Musik*. The composer himself attests that the *Requiem* is not engaged music. It does not take up actual political or social themes such as the war, dictatorship or the policy of

frequently discussed the musical structure of the work itself.[139] This kind of commentary on structure and compositional process is very much in line with the Darmstadt composers' emphasis on structure rather than genre, meaning or historical context, both in their titles and in their work commentaries and analyses. Ligeti tried to situate his *Requiem* on the same abstract, structural plane as contemporary works, but he was simultaneously aware that his composition of a *Requiem* was a major divergence from the established standard amongst his avant-garde colleagues. As he wrote in a letter to Ove Nordwall just three months before the premiere:

> I think—but I certainly could be mistaken—that the *Requiem*, and in particular the "Dies irae", is the best [piece] that I have composed so far. It could in fact be that many people are disappointed and will say that I am no longer an "avant-gardist." This is because the "Dies irae" could appear as more conservative than all my other works, on account of the manner of the drama and the expressions, and due to the use of a quite rigorous polyphonic compositional technique. But to this, I would say: It does not concern me whether I am counted among the "avant-garde" or the "reactionaries." It only concerns me that I compose the music that I envision.[140]

So Ligeti did acknowledge that he was unusual amongst his colleagues for composing in a genre so bound up with traditions, and he was willing to comment on this apparent

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non-proliferation." *Das Musikalische Material*, 144; see also 166. "Es bezieht sich auch nicht auf den Tod einer bestimmten Person oder auf irgendein tragisches Ereignis, sondern wurde, wie schon erwähnt, für das Jubiläum der Konzertserie Nutida Musik des Schwedischen Rundfunk geschrieben. Der Komponist selbst bestätigt, das *Requiem* sie keine engagierte Musik. Sie nimmt nicht zu aktuellen politischen oder sozialen Themen Stellung, zum Krieg, zur Diktatur oder zur Verwendung von Kernwaffen."

[139] See Ligeti, "*Requiem* und anderes: Briefnotizen zu Kompositionen 1964," "Zum *Requiem*" and "Über mein *Requiem*," *Gesammelte Schriften* II, 226-232.

[140] Ligeti, "*Requiem* und anderes," *Gesammelte Schriften* II, 227. "Ich denke—aber freilich kann ich mich irren—daß das *Requiem*, und vor allem das "Dies irae", das beste ist, was ich bisher komponiert habe. Das wird vielmehr sein, daß viele Leute enttäuscht sind und sagen werden, ich sei kein "Avantgardist" mehr. Denn das "Dies irae" kann konservativer als meine anderen Stücke erscheinen, wegen der Art der Dramatik und des Ausdrucks und wegen der Verwendung einer sehr strengen polyphonen Satztechnik. Dazu würde ich aber sagen: Es kümmert mich nicht, ob ich zur "Avantgarde" oder zur "Reaktion" gerechnet werde. Es kümmert mich nur, diejenige Musik zu komponieren, die mir vorschwebt."

departure from his colleagues' aesthetics. Without question, Ligeti grasped that composing a *Requiem* implied a historical dimension. However, he still tried to displace questions of the *Requiem*'s intended audience and beneficiaries by focusing his commentary on the implications of his *Requiem* setting toward distant influences rather than recent history. For instance, he named a parade of inspirations—from renaissance Flemish-school painters Hieronymus Bosch and Pieter Brueghel to medieval composers Pérotin and Ockeghem—that he said shaped the piece.[141] His focus on medieval and renaissance inspirations is like a screen that deflects attention away from the immediate cultural context. Despite his attention to the historical resonance of the genre of the *Requiem*, his commentaries and interviews consistently fail to address the implications of composing a *Requiem* in post-war Germany.

Ligeti, as is well known, was a secular Jew.[142] In his copious writings, interviews and work commentaries, there is, however, precious little discussion of Ligeti's personal history as a Jew or his relationship with the events of World War II and the Holocaust.[143] Ligeti remained reluctant to discuss or call attention to this aspect of his biography, writing to Harald Kaufmann in 1968 that, "I have very little to do with the Jewish tradition (probably less than Mahler and Schoenberg) for my parents were by and large already what they called 'assimilated Jews' […] I observe the Jewish tradition as

[141] Ligeti, *Ligeti in Conversation*, 46-50; "Über mein *Requiem*," *Gesammelte Schriften* II, 232.
[142] Similar accounts of Ligeti's youth, ethnicity and wartime experiences appear in Wolfgang Burde, *György Ligeti: Eine Monographie* (Zürich: Atlantis-Musikbuch, 1993), 27-30; Toop, *György Ligeti*, 10-22 and Steinitz, *György Ligeti*, 3-23.
[143] Ligeti's Jewishness was certainly no secret directly after his emigration, but it was a subject he avoided discussing for quite some time. In two places he does discuss the issue in depth: *Ligeti im Gespräch mit Eckhard Roelcke* (2001), 46-60 and "Mein Judentum (1978)," *Gesammelte Schriften* II, 20-28.

something exotic, as if from a distance. This is a sort of disguised Jewish complex."[144] Interviewers seem to have politely avoided asking Ligeti about the subject—either his Jewishness or his experiences during the Second World War—for decades; after all, one can imagine why an interviewer would be loathe to bring up something as horrific and unspeakable as the Holocaust, especially when it would have had such a personal resonance with Ligeti.[145]

Nonetheless, the events of World War II caused enormous suffering for Ligeti and his family. When the war broke out in 1940, Ligeti initially avoided being drafted into the army and was able to continue with his studies.[146] As Ligeti explained, this was because "minorities that to the Hungarian political establishment were unsuitable—such as all Jews, Gypsies, Romanians, Serbians, [and] Ukrainians—did not fight with guns, since they were untrustworthy."[147] In January 1944, however, he was drafted into a forced labor unit, first carrying sacks in grain silos and later unloading trains and transporting munitions to troops on the front line. He once escaped from the labor unit on fake papers, returning to his home town to visit his parents for one day. It would be

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[144] Werner Grünzweig and Gottfried Krieger, eds., *Harald Kaufmann: Von innen und aussen* (Hofheim: Wolke, 1993), 231. Quoted and translated by Beckles Willson, *Ligeti, Kurtág, and Hungarian Music*, 121.
[145] Ligeti was more willing to discuss the second major trauma of his life, his crossing from Hungary into Austria in late 1956, though here too he was conscious of the impressions that were created and propagated. He writes editorial suggestions on one of Kaufmann's articles in 1968: "Perhaps 'emigration' is not the right word. ('Flight' would be far too dramatic on the other hand, so not recommendable either.) I'd simply suggest: 'Since 1956, permanent residence in Vienna'." Grünzweig and Krieger, eds., *Harald Kaufmann: Von innen und aussen*, 237. Quoted and translated by Beckles Willson, *Ligeti, Kurtág, and Hungarian Music*, 120.
[146] The following account draws from Ligeti, "Mein Judentum," *Gesammelte Schriften* II, 23-28; *Ligeti im Gespräch mit Eckhard Roelcke*, 46-60; Toop, *György Ligeti*, 17-22; Steinitz, *György Ligeti*, 19-21.
[147] *Ligeti im Gespräch mit Eckhard Roelcke*, 48. "Die Minoritäten, die für die ungarische Politik nicht genehm waren, also alle Juden, Zigeuner, Rumänen, Serben, Ukrainer, haben nicht mit dem Gewehr gekämpft, weil sie unzuverlässig waren."

the last time he saw them together, for beginning in April, Jews were rounded up and forced to live in ghettos. In May, they were transported to Auschwitz and other camps where 250,000 to 300,000 Hungarian Jews were killed.[148] Ligeti says, "I saw this myself in Großwardien, as our company was stationed there. Each night trains completely full of Jewish people passed by very near to our barracks."[149] After the war, Ligeti learned that his father had died at Bergen-Belsen after being transferred there from Auschwitz and Buchenwald. Ligeti's younger brother was killed at Mauthausen after being forcibly marched there from Auschwitz. His mother was also taken to Auschwitz, but presumably because she was a doctor, she survived. Many of his aunts and uncles were also killed.[150]

That Ligeti survived the war at all was remarkably lucky. Ironically, his Jewishness had prevented him from being drafted into the army early on, and while the forced labor unit was extremely dangerous, it also saved him momentarily from deportation and almost certain extermination at the camps.[151] It was good fortune that he was sent to the town of Großwardein when his unit was divided; his comrades were sent to copper mines in Serbian Bor and later shot by the SS. In September and October 1944, when Ligeti was shuttling munitions to the front lines, he was captured a number of times by Soviet soldiers. Each time he escaped, either through the ambivalence of the Soviet

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[148] The figure is cited in Steinitz, *György Ligeti*, 19.
[149] *Ligeti im Gespräch mit Eckhard Roelcke*, 56. "Ich habe das in Großwardein selbst gesehen, als unsere Kompanie dort stationiert war. Jede Nacht fuhren die Züge voll mit der jüdischen Bevölkerung ganz nah an der Kaserne vorbei."
[150] Ligeti explains which of his aunts and uncles survived in "Mein Judentum," *Gesammelte Schriften* II, 27-28.
[151] Ligeti remarks that being considered simply "untrustworthy" by the Hungarian government (for a comparatively long time) was a pretty good fate compared to the German Jews who were exterminated by Hitler without question. *Ligeti im Gespräch mit Eckhard Roelcke*, 48.

soldiers or through a comedy of errors such as running the opposite way as his captors for cover when Soviet and German planes shot each other down right in front of them. His ultimate escape from both the Soviets and the labor unit came in October of 1944 when, during a march through the streets of Großwardein, Soviet tanks bisected his company and chaos ensued. Being in the back half of the group, he was able to run off into the side streets of the town and disappear. As Steinitz says, this last escape was extremely fortuitous, since if he had remained a Soviet prisoner he would have almost certainly been sent to Siberia; Ligeti later heard that the rest of his labor unit was deported to Mauthausen.

It goes without saying that the traumas of the war, witnessing the Holocaust and losing most of his family left deep scars. As Ligeti writes, "I try to speak without emotion, though I am, naturally, completely filled with hatred against the Nazis."[152] He also felt incredibly guilty that he had survived when so many others had not: "Understandably, I identified myself as a Jew and suffered, like many other survivors, from guilt: Why is it me who had survived, and by what right?"[153] The *Requiem* also followed additional losses in Ligeti's life. As a result of Stalin's political control of the Hungarian government, which followed uncomfortably close on the heels of the Nazi terror, he was forced to leave his homeland under increasingly dangerous and repressive

[152] *Ligeti im Gespräch mit Eckhard Roelcke*, 54. "Ich versuche, ohne Emotion zu sprechen, obgleich ich selbstverständlich dermaßen voller Hass gegen die Nazis bin."
[153] Ligeti, "Mein Judentum," *Gesammelte Schriften* II, 28. For more on survivors' guilt, see Susan L. Pentlin, "Holocaust Victims of Privilege," *Problems Unique to the Holocaust*, ed. Harry James Cargas (Lexington: University Press of Kentucky, 1999), 25-42. "Selbstverständlich fühlte ich mich aber als Jude und litt, wie viele andere, die am Leben geblieben waren, unter Schuldgefühlen: Warum habe gerade ich überlebt, mit welchem Recht?"

conditions. The decision to escape from his homeland was a traumatic one, which he seemed to conflate with his survivor's guilt:

> After the flight, I thought for some time about converting to Catholicism, and as a home- and country-less person, I was also inclined for a time to deny my Jewishness or not to mention it in any way. This neurosis was a consequence of being a refugee and the enormous uncertainty at that time.[154]

Ligeti knew that the considerable personal, psychological trauma of these memories was inescapable:

> For professional reasons I lived in Austria and Germany; I remained here with the awareness that the tension and resentments which we all, Jews and non-Jews, carry from the Hitler era are incurable—they are psychic facts with which we must live.[155]

As Julia Epstein has theorized, Holocaust survivors may understand the process of remembering both as a necessity and an enormous burden: "The memory of trauma, the painful difficulty of remembering an atrocity, becomes traumatic memory; that is, remembering becomes part of the trauma […]"[156] In light of Ligeti's biographical experiences and his testimony above, which suggests that he indeed bore emotional scars from the Holocaust and the Stalinist regime, it is tempting to read the *Requiem* as Ligeti's personal response to these dual traumas though he declined to do so himself. Along this

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[154] Ligeti, "Mein Judentum," *Gesammelte Schriften* II, 28. For more on this second trauma, see Beckles Willson, *Ligeti, Kurtág, and Hungarian Music*, 87-92. "Nach der Flucht, dachte ich eine Zeitlang daran, zum Katholizismus überzutreten, und als Heimat- und Staatenloser neigte ich auch eine Zeitlang dazu, mein Judentum abzuleugnen oder es jedenfalls nicht zu erwähnen. Das war eine Folge der Flüchtlingsneurose und der damaligen großen Unsicherheit."

[155] Ligeti, "Mein Judentum," *Gesammelte Schriften* II, 28. "Aus beruflichen Gründen lebte ich in Österreich und Deutschland, ich bleib hier, mit dem Bewusstsein, dass die Verkrampfung und die Ressentiments, die wir alle, Juden und Nichtjuden, seit der Hitlerzeit mit uns schleppen, unheilbar sind—sie sind psychische Fakten, mit denen wir leben müssen."

[156] Julia Epstein, "Remember to Forget: The Problem of Traumatic Cultural Memory," *Shaping Losses*, ed. Epstein and Lefkovitz (Urbana: University of Illinois Press, 2001), 186.

line, one might read Ligeti's interest in the Catholic faith after his emigration as evidence of his search for catharsis, forgiveness or redemption from guilt—and his turn to the liturgical *Requiem* as an extension of this search. Furthermore, it is interesting to note that he drafted two separate *Requiem* settings before finally settling on the musical realization that we find in the finished work.[157] The drafts for the final, 1963-65 version held in the Paul Sacher Foundation archive are numerous; Ligeti's repeated attempts at composing the *Requiem* suggest that he struggled to envision and compose an adequate memorial for such an unspeakable tragedy—a struggle that would be entirely appropriate given the nature of traumatic memory as theorized by Epstein.[158]

Compelling as these speculations may seem, it is impossible to know whether Ligeti intended the *Requiem* as a Holocaust memorial or composed it as a cathartic response to the psychological traumas that remained with him. More relevant is that the brutal events of the Holocaust and the Stalinist dictatorship were and are a part of the collective consciousness. It is within this collective context that his *Requiem* can be profitably read.[159] Ligeti was a Jewish composer who wrote a *Requiem* in the post-war years, but the reception of the work continues to be shaped by listeners who are aware of the Holocaust and related traumas, along with the memorializing function of the genre of

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[157] Steinitz, *György Ligeti*, 141.

[158] See Stephen C. Feinstein, "Art after Auschwitz," *Problems Unique to the Holocaust*, ed. Cargas (Lexington: University Press of Kentucky, 1999), 152-168. Also consider Adorno's famous dictum that "[…] to write poetry after Auschwitz is barbaric." "Cultural Criticism and Society (1951)," *The Adorno Reader*, ed. Brian O'Connor (London: Blackwell, 2000), 210; and Elie Wiesel's suggestion that "[…] just as no one could imagine Auschwitz before Auschwitz, no one could now retell Auschwitz after Auschwitz." "Trivializing Memory," *From the Kingdom of Memory* (New York: Schocken/Summit Books, 1990), 166.

[159] Ulrich Dibelius contextualizes Ligeti's *Requiem* in this way and points out that other of Ligeti's colleagues offered requiems or memorial pieces as well (*György Ligeti*, 84).

the requiem. That Ligeti avoided, or at times actively denied,[160] that his music could be read as a response to extra-musical events should be no serious deterrent to placing Ligeti's works within their historical and cultural contexts.

At the time when Ligeti composed the *Requiem*, Germany was mired in the contentious and difficult process of coming to terms with the Nazi past. In the immediate post-war years, the conservative West German government led by Konrad Adenauer failed to pursue adequate justice for Nazi war criminals, believing that a commitment to paying monetary restitutions to survivors was sufficient to meet the state's moral obligations.[161] Furthermore, political rhetoric and public speeches frequently omitted or side-stepped language that directly confronted the extent of Nazi crimes. Adenauer particularly avoided direct mention of the Jewish ethnicity of Holocaust victims, which essentially elided the suffering and murder of the Jews, who were killed merely for having been born, with the suffering of political dissidents more generally under Hitler's regime.[162] That the crimes of the Nazi era were articulated and made "a constitutive

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[160] See Ligeti, "Music and Politics," trans. Wes Blomster, *Perspectives of New Music* 16/2 (1978): 19-26. Ligeti tends to soften his stance throughout the essay, though, arguing that music can be used to represent multiple meanings rather than taking a hard line, "music refers only to music" stance.

[161] Jeffrey Herf, *Divided Memory: The Nazi Past in the Two Germanys* (Cambridge, MA: Harvard University Press, 1997), 267-333. A shorter version of this work appears in Herf, "The Emergence and Legacies of Divided Memory: Germany and the Holocaust after 1945," *Memory and Power in Post-War Europe* (Cambridge, Cambridge University Press, 2002), 184-205.

[162] Herf, *Divided Memory*, 268-300. This line of rhetoric, which emphasizes the collective suffering of the victims of the Holocaust rather than being forthright about the ethnicity of majority of the victims, came to a head in the 1980s when Ronald Reagan laid wreaths at Bergen-Belsen and Bitburg, commemorating and essentially conflating the suffering and deaths of Jewish Holocaust victims and SS soldiers (350-54). On this point, see also James Young, *Writing and Rewriting the Holocaust* (Bloomington: Indiana University Press, 1988), 182. Public, state-sponsored commemoration of Holocaust events was suppressed almost entirely in East Germany until 1989; Herf, *Divided Memory*, 1-200.

element of national political memory"[163] at all was due to politicians and intellectuals in the democratic Left such as Kurt Schumacher, Nahum Goldmann and Theodor Heuss, who insisted on speaking frankly about Nazi atrocities and naming victims honestly.

Holocaust memorials in Germany, intended to publicly commemorate, remember and honor, are also marked by the ambivalence of a nation reluctant to acknowledge its shameful past. As James Young says, "[…] [I]t is little wonder that the German national memory of the Holocaust remains so torn and convoluted […] How does a nation mourn the victims of a mass murder perpetrated in its name? How does a nation re-unite itself on the bedrock memory of its horrendous crimes?"[164] Evidence of this national and cultural uncertainty about how to memorialize the Holocaust is reflected in the erasure of the specifically Jewish identity of the victims at concentration camp memorials, Young says. At Dachau, three plaques memorialize Catholic, Protestant and Jewish victims, with the two Christian memorials functioning to "atone for Nazi sins against humanity" rather than to mourn the loss of the Jewish community.[165] At Bergen-Belsen, the burial mounds and headstone-like monuments represent "little of what transpired specifically." Small traces of the Jewish ethnicity of the victims, such as Hebrew inscriptions on the stones, are elided with a "more general memory of anonymous victims."[166]

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[163] Herf, *Divided Memory*, 312.
[164] James Young, "The Texture of Memory: Holocaust Memorials in History," *Cultural Memory Studies: An International and Interdisciplinary Handbook*, ed. Astrid Erll and Ansgar Nünning (Berlin: Walter de Gruyter, 2008), 359. See also Caroline Wiedmer, *The Claims of Memory: Representations of the Holocaust in Contemporary Germany and France* (Ithaca, NY: Cornell University Press, 1999), 4.
[165] Young, *Writing and Rewriting*, 182-83.
[166] Young, *Writing and Rewriting*, 183.

In the political and cultural rhetoric of the post-war years then, scholars have observed a marked ambivalence about articulating the Jewish identity of Holocaust victims and recounting the full extent of their terrible suffering. Ligeti's *Requiem* shows traces of having been shaped by that prevailing cultural ambivalence as well—first and foremost, the *Requiem* text and tradition is Catholic, not Jewish, which actively displaces the signification from a memorial to Jewish victims of the Holocaust to the more general, anonymous memorial quality provided by the connotations of the genre of the requiem. Ligeti's rhetoric about the work also performs this erasure in two ways: in declining to mention a specific person group that was the intended beneficiary of the *Requiem* prayer, saying instead that the *Requiem* was "for all mankind,"[167] Ligeti allows his work to perform a general rather than specific memorializing function, much like the ambivalent Holocaust memorials in Germany. Secondly, his previously discussed emphasis on the structural and compositional tools of the *Requiem* seeks to redouble questions of the work's meaning back on to the structure of the work itself. Ligeti goes so far as to say that, due to the dense polyphony that pervades the Kyrie movement, the text remains "neutral, free from imagery."[168]

The *Requiem* and Ligeti's commentary upon it, by themselves, avoid the suggestion that the piece could be understood as a Holocaust memorial. Paradoxically, this fact is precisely the evidence that suggest that the *Requiem* is a product of the historical, cultural context of post-war Germany—very few public speeches or memorials

[167] The 1965 press conference where Ligeti made these remarks is recounted in Salmenhaara, *Das Musikalische Material*, 166.
[168] Ligeti, *Ligeti in Conversation*, 49-50.

adequately recognized the scope and victims of the Holocaust in the post-war years either. In fact, it would have been difficult for Ligeti to publicly address the Holocaust (through his *Requiem*) when there was so little public initiative to do so in post-war Germany. That we can understand Ligeti's *Requiem* as a Holocaust memorial now is a testament to our ability to conjoin the traditional memorializing function of the genre of the requiem with an understanding of Ligeti's biography and, more importantly, the historical position of the work. Contemporary audiences understand that memories of the Holocaust continue to traumatize. Furthermore, as scholars have pointed out, the ambiguity of many of the Holocaust memorials allows new meanings to be mapped on by successive generations, according to cultural norms and narratives. As Young writes,

> If the *raison d'être* for Holocaust monuments is 'never to forget,' this chapter asks precisely what is not forgotten at Bergen Belsen, Dachau, Auschwitz, Babi Yar, Yad Vashem, or Liberty State Park in Jersey City. For what is remembered here necessarily depends on how it is remembered; and how these events are remembered depends in turn on the shape memorial icons now lend them.[169]

Thus, the process of drawing a specific meaning out of the general context—our willingness to read Ligeti's *Requiem* as a Holocaust memorial despite his disinclination to do so—demonstrates the way the meaning of admittedly ambiguous post-war memorials can be constantly reclaimed within present socio-cultural contexts, which emphasize a continual reexamination of the Holocaust.

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[169] Young, *Writing and Rewriting*, 173; see also Young, *The Texture of Memory: Holocaust Memorials and Meaning* (New Haven: Yale University Press, 1993); Young, "Memory and Counter-Memory: Towards a Social Aesthetic of Holocaust Memorials," *After Auschwitz*, ed. Monica Bohm-Duchen (London: Northern Centre for Contemporary Art, 1995), 78-102; Young, *At Memory's Edge: After-Images of the Holocaust in Contemporary Art and Architecture* (New Haven: Yale University Press, 2000).

That Ligeti tapped into collective memory in the *Requiem* can also be seen, on a more specifically musical level, in his use of Webernian and Bartókian elements in the structural foundations of the work. As I have argued throughout this chapter, the reception of both Webern and Bartók's music amongst the Darmstadt circle was deeply shaped by post-war politics and ideologies. Ligeti's actions, both scholarly and composerly, show a keen sensitivity to the historical situation and the collective memories that were actively developed around both composers—Ligeti behaved in politically and culturally savvy ways when it came to addressing his dual interest in Bartók and Webern. Though the reigning Cold War politics suggested that the structural dimensions of the music should remain the primary topic for discussion around Darmstadt, the avant-garde did acknowledge that neither Bartók nor Webern personally escaped from the rubble of World War II.

Though not a victim of Hitler in the same way as the Jews, Bartók nevertheless bore personal consequences in the war: Bartók fell ill and died in New York City in 1945 after choosing emigration in protest of Fascism. He sacrificed his home and ultimately his health, dying in poverty in a foreign country. The Darmstadt circle recognized that Bartók had suffered and sacrificed in ways that many of them had, too. As Adorno said, "Bartók […] left his country for exile and poverty in protest against Fascism"[170] and Boulez concurred: "Bartók took a courageous stand against Nazism."[171] If the structural details and aesthetics of Bartók's music were unworthy objects for study amongst the

[170] Theodor Adorno, *Impromptus*, 98-99. Quoted in János Breuer, "Adorno's Image of Bartók," 29. Fosler-Lussier includes a similar quote from Adorno's "Aging of the New Music" in *Music Divided*, 30.
[171] Boulez, "Béla Bartók," *Stocktakings*, 238-39.

Darmstadt clique, at least he could be redeemed in the spirit of solidarity against Fascism. It is possible that Ligeti felt similarly toward Bartók. Though Ligeti could no longer accept him as a compositional model, he maintained a kinship with Bartók due to their shared heritage, persecution under the Fascist regime, and forced emigrations (though fifteen years apart). Bartók's presence in the *Requiem*, though on a structural level, alludes to the collective redemption of Bartók as a comrade if not a musical idol.

Webern, too, was a victim of the war, shot by an American soldier on September 15, 1945 in an apparent mistake during a scuffle in his building.[172] The Darmstadt composers marked this tragic loss as well; in the volume of *Die Reihe* dedicated to Webern, Krenek wrote something of an epitaph: "Under it [Webern's gravestone] rests the prophet of a new musical cosmos, torn from this world by a dastardly fate."[173] It was, of course, much simpler for the Darmstadt composers to read Webern's death as an untimely tragedy and simultaneously embrace him as the idol that "rules over the musical thinking of a generation."[174] No redemption was necessary; Webern's life, death and music were unsullied in the post-war, Cold War politics of the day. Ligeti's embrace of Webernian techniques in the *Requiem* reflects his and his colleagues' idolization of Webern. Moreover, Webern's presence in the *Requiem* suggests that Ligeti made use of the historical models that remained appropriate amongst his milieu. Instead of being

[172] See Anne C. Schreffler, "Anton Webern," *Schoenberg, Berg and Webern*, ed. Bryan Simms (Westport, CT: Greenwood, 1999), 306.
[173] Ernst Krenek, "The same stone which the builders refused is becoming the headstone of the corner," trans. Eric Smith, *Die Reihe* 2 (Eng. ed., 1958), 12.
[174] Krenek, "The same stone," 12.

immune or deadened to the historical detritus that lay at their feet after World War II, Ligeti and the younger generation of Darmstadt avant-gardists sifted through it carefully.

Sorting through historical memories, both as individuals and as a culture, is a complicated process. On that point, Walter Benjamin's image of the *Angelus Novus* is an appropriate one to invoke:

> There is a picture by Klee called *Angelus Novus*. It shows an angel who seems about to move away from something he stares at. His eyes are wide, his mouth is open, his wings are spread. This is how the angel of history must look. His face is turned toward the past. Where a chain of events appears before *us*, *he* sees one single catastrophe, which keeps piling wreckage upon wreckage and hurls it at his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise and has got caught in his wings; it is so strong that the angel can no longer close them. This storm drives him irresistibly into the future, to which his back is turned, while the pile of debris before him grows toward the sky. What we call progress is *this* storm.[175]

For the Darmstadt composers, progress was both inevitable and deeply necessary. But this desire for "modernism" and "progress" did not mean that their faces were not simultaneously turned toward the past. As Michael Roth writes, "[…] in modernity, memory is the key to personal and collective identity."[176] Ligeti's *Requiem* reflects this situation quite clearly. Its structural underpinnings of Webern and Bartók, not to mention the medieval counterpoint, painterly and literary inspirations that Ligeti attributes, embody something of the wreckage of history. Yet, Ligeti's voice pushes forward into

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[175] Walter Benjamin, "On the Concept of History," trans. Edmund Jephcott et al., *Selected Writings* Vol. 4 (1938-1940) (Cambridge, MA: Harvard University Press, 2003), 392. Emphasis Benjamin's. Benjamin owned the Klee picture *Angelus Novus* since 1921; it is now in the Israel Museum in Jerusalem (446). Google Image Search turns up a number of photos of the Klee work. Incidentally, Benjamin (also a Jew) was a victim of the war; he committed suicide after failing in an attempt to flee Europe and the Nazi terror in 1940 (427-447).

[176] Michael Roth, *The Ironist's Cage: Memory, Trauma and the Construction of History* (New York: Columbia University Press, 1995), 8.

the future with his signature aesthetic effects—clusters, micropolyphonic sound-masses and hyper-expressionist drama. The ambiguity and abstractness that Ligeti claimed as to the meaning of the *Requiem* do not necessarily preclude our understanding of it as a response to the Holocaust. In fact, quite the opposite—Ligeti's ambivalence about the function of his *Requiem* in the immediate post-war context reflects the larger cultural uncertainty about what Holocaust facts should be remembered, and how they should be remembered.

Conclusion

In this dissertation, I have endeavored to problematize the dominant narratives that have shaped the reception of Ligeti's music. Specifically, I have interrogated the idea that Ligeti's music is anomalous or independent from his contemporaries. Beginning from Halbwachs's idea that memory is a collective phenomenon, Chapter 1 developed the framework of historical memory to argue that Ligeti's interpretation of the musical past depended on the discourses in circulation about it amongst the Darmstadt avant-garde. Chapter 2 presented evidence of Ligeti's immersion—both physically and intellectually—in the Darmstadt circle, demonstrating that Stockhausen and Eimert's readings of *Jeux* were crucial for Ligeti's conceptualization and composition of the sound-mass textures in *Apparitions* and *Atmosphères*. Chapter 3 presented further evidence of Ligeti's debt to the Darmstadt circle, showing that the discourses and compositional techniques produced around electronic music at the *Westdeutscher Rundfunk* studio were essentially re-produced in acoustic form in *Atmosphères*. Chapter 4 acknowledged the role of the discourses around *Klangfarbenmelodie*, which were articulated strongly by Boulez and Adorno, in shaping Ligeti's conception of "timbral" music in *Lontano*, *Aventures* and the *Cello Concerto*. And as the analysis of the *Requiem* showed in Chapter 5, Ligeti's increasing preference for Webern's music after 1956 functioned as a substitute for his earlier reference-point, Bartók, whose music was no longer a suitable model in either Hungarian or Western European avant-garde circles due to Cold War politics. Ligeti's interest in Webern's music accorded with the high value

placed on it amongst the Darmstadt milieu as well as the cultural and political circumstances of the historical moment.

Together, this evidence challenges the dominant understanding of Ligeti's sound-mass works as anomalous by suggesting that Ligeti was in fact deeply dependent on the creative atmosphere of the Darmstadt circle as he composed the sound-mass works. Ligeti will likely continue to be known, and rightly so, as a keen critic of serialism due to his "Metamorphoses of Musical Form" and "Decision and Automatism in Boulez's *Structures Ia*" articles. Furthermore, his aesthetic sensibility clearly differs from the pointillist, serialist orientation of his contemporaries. This dissertation has shown, however, that even though Ligeti was not a rank-and-file serialist, he was indebted to the discourses and ideas in circulation amongst his colleagues in the Darmstadt avant-garde as he composed the sound-mass works.

On another level, this dissertation implicitly challenges the historical narrative told about the Darmstadt school. The high modernist aesthetic of the Darmstadt school is often seen as the culmination of the independent creator/composer myth. This modernist myth, with its attendant "frantic search for the new,"[177] to quote Leonard B. Meyer's phrase, emphasizes both the individuality of the creator/composer amongst his peers and his independence from the outmoded aesthetics and techniques of earlier generations. As Fredric Jameson writes, "The great modernisms were predicated on the invention of a personal, private style, as unmistakable as your fingerprint, […] organically linked to the

[177] Leonard B. Meyer, "Innovation, Choice, and the History of Music," *Critical Inquiry* 9/3 (March 1983): 521.

conception of a unique personality and individuality [with] its own unique vision of the world."[178] In the modernist aesthetic, one needs to demonstrate that one is forging a new creative path by standing apart from all but the most contingent historical influences.[179]

The Darmstadt composers propagated this modernist myth in part by elaborating a musical discourse almost exclusively in terms of pure structure. In the post-war avant-garde, the musical structure is often equated with the content of the work—the apparent self-referentiality of Ligeti's *Requiem* is a case in point. The Darmstadt composers actively displaced questions about their relationship to both the musical past and contemporary social, political and cultural concerns with their emphasis on structure, technique and innovation. Scholarship about the Darmstadt school has in many cases followed this trend. As this study has shown, however, Ligeti and the Darmstadt composers' works are intimately bound up with their constant reinterpretation of historical figures. Some influences, such as Webern, are commonly acknowledged, while others are less so—but the important point is that the Darmstadt avant-gardists were perpetually involved in a process of remembering and reevaluating the musical contributions of their predecessors. Their concern with structure—itself a reflection of the Cold War ideologies that formed the basis of the post-Nazi era—suggests not that their works are hermetically sealed against influence, but on the contrary, that the process of producing those works involved a shrewd, although sometimes covert reckoning with

[178] Fredric Jameson, "Postmodernism and Consumer Society," *Postmodern Culture* ed. Hal Foster, (London: Plato Press, 1985), 114. Quoted in Charles Wilson, "György Ligeti and the Rhetoric of Autonomy," *Twentieth Century Music* 1/1 (2004): 17.
[179] See for example Pierre Boulez, "Schoenberg is Dead" and "…Near and Far," *Stocktakings*, 209-214 and 141-157.

and reuse of past influences. As Benjamin's *Angelus Novus* suggests, Ligeti and the Darmstadt avant-garde were pushed forward by the "irresistible storm of progress." The concepts of modernity, progress and abstraction defined their rhetoric. This rhetoric of progress, however, cannot be separated from the Darmstadt avant-garde's perpetual reckoning with their musical predecessors and the historical memory of the culture in which they were immersed.

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